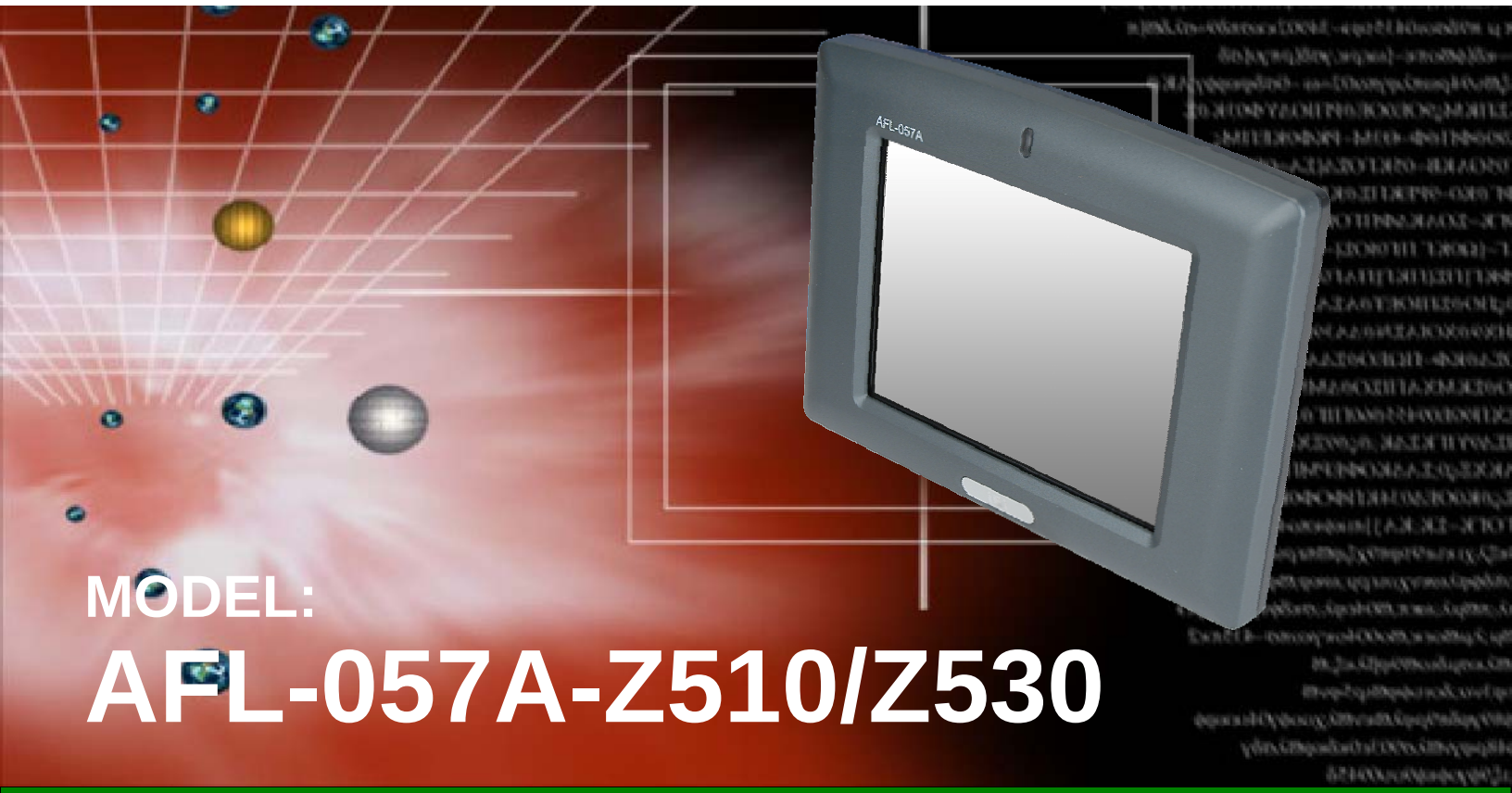
IEI Technology Corp.



MODEL:

AFL-057A-Z510/Z530

5.7” PoE Panel PC with Touch Screen, Intel® Atom™ Z510/Z530 CPU, Gigabit Ethernet, USB, RS-232/422/485, RoHS Compliant, IP 64 Protection

User Manual

Rev. 1.02 – 8 November, 2012

RoHS Lead Free

Revision

Date	Version	Changes
8 November, 2012	1.02	Modified Table 3-3: COM1 Mode Settings (SW3)
14 September, 2011	1.01	Added a note on page 32 regarding the pinouts of the 5 V DC input terminal block for the R10 model.
28 June, 2011	1.00	Initial release

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Chapter

1

Introduction

1.1 Overview

Figure 1-1: AFL-057A-Z510/Z530

The AFL-057A-Z510/Z530 flat panel PC is a flexible, multi-functional and fanless flat panel PC that can be applied in diverse operational environments and implemented in multi-faceted applications. The AFL-057A-Z510/Z530 comes fully kitted with a high-performance motherboard and a host of other peripheral interface connectors. The PoE (Power over Ethernet) function allows the AFL-057A-Z510/Z530 to meet multiple application requirements. The AFL-057A-Z510/Z530 is designed for ease of use and easy installation.

1.1.1 Model Variations

The models of AFL-057A-Z510/Z530 are listed in **Table 1-1**.

Model	LCD	Brightness	CPU	Memory	Touch screen
AFL-057A-Z510/R/1G	5.7”	400 cd/m^2	Intel® Atom™ Z510	1 GB	Yes
AFL-057A- Z530/R/1G	5.7”	400 cd/m^2	Intel® Atom™ Z530	1 GB	Yes

Table 1-1: Model Variations

1.1.2 Standard Features

Some of the standard features of the AFL-057A-Z510/Z530 flat panel PC include:

- 5.7” LED backlight panel with 4-wire resistive touchscreen
- Fanless Design
- Intel® Atom™ Z510/Z530 processor up to 1.6 GHz
- IEEE802.3af Power Over Ethernet (PoE) compliant
- One 1 GB 533 MHz DDR2 memory module pre-installed
- Rugged mechanism design with ABS/PC case
- IP 64 dustproof and waterproof front panel
- One GbE Ethernet port with PoE support
- One CompactFlash® Type I/II slot
- Wide operating temperature capability: -20ºC to 60ºC
- IEI One Key Recovery solution for rapid OS backup and recovery (over 4 GB storage capacity recommended)
- RoHS compliance

1.2 External Overview

1.2.1 General Description

The AFL-057A-Z510/Z530 is a stylish flat panel PC that comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with VESA FDMI standard. The bottom panel provides access to external interface connectors that include LAN, USB 2.0, serial port and power connector.

1.2.2 Front Panel

The front side of the AFL-057A-Z510/Z530 is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame.

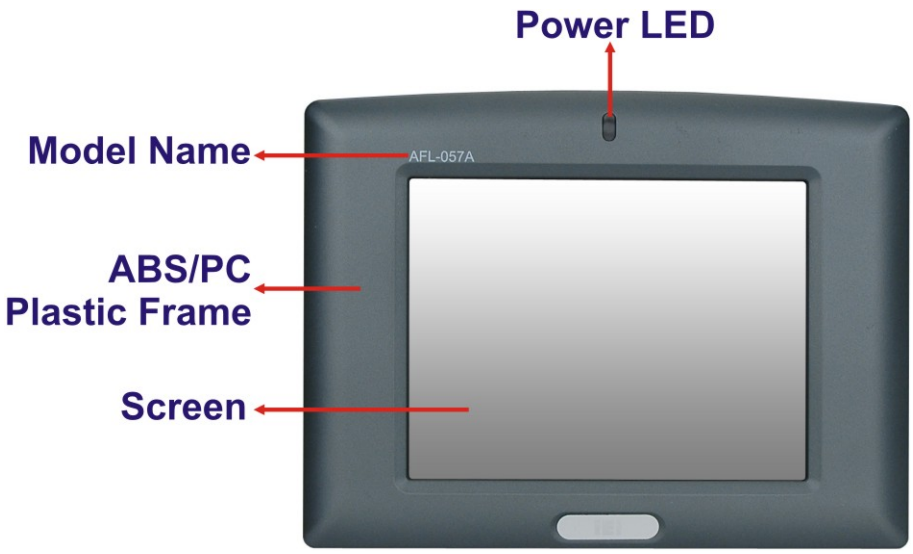


Figure 1-2: Front View

1.2.3 Rear Panel

The rear panel provides access to retention screw holes that support the wall mounting. Refer to **Figure 1-3**.

Figure 1-3: Rear View

1.2.4 Top Panel and Side Panels

The top panel and side panels of AFL-057A-Z510/Z530 provides access to slots that support panel mount and rack mount (**Figure 1-4** and **Figure 1-5**).

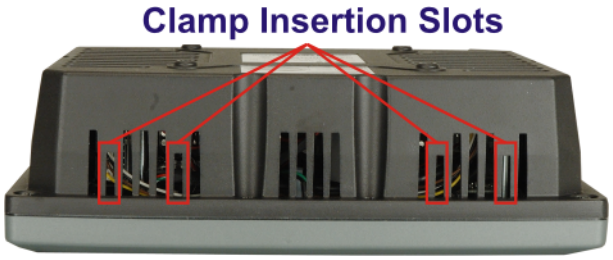


Figure 1-4: Top View

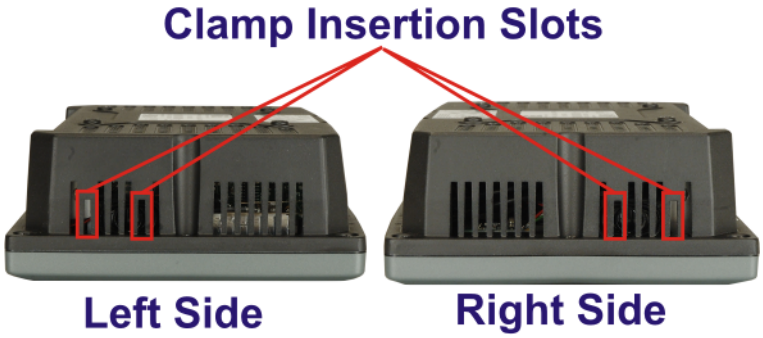


Figure 1-5: Side View

1.2.5 Bottom Panel

The bottom panel of the AFL-057A-Z510/Z530 has the following I/O interfaces (**Figure 1-6**):

- 1 x 5 V DC power input connector
- 1 x RS-232 or RS-422/485 serial port connector (selected by a jumper)
- 1 x RJ-45 Gigabit Ethernet connector (supports PoE/PD)
- 1 x USB 2.0 connector

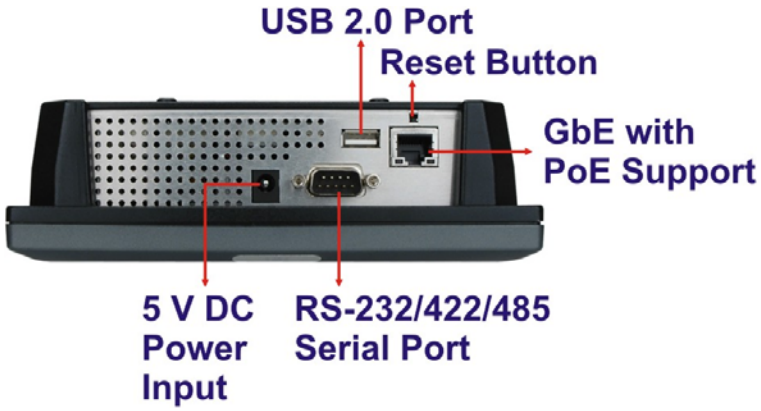


Figure 1-6: AFL-057A-Z510/Z530 Bottom View

1.3 Internal Overview

The AFL-057A-Z510/Z530 internal components are protected in a plastic back cover. Internal components, the motherboard, DDR memory module and CF card slot are installed above a metal sheet that protects the rear of the TFT LCD screen. Below the metal sheet is a circuit board that is connected to the LCD panel with LED backlight.

1.4 Specifications

The technical specifications for the AFL-057A-Z510/Z530 systems are listed in **Table 1-2.**

SPECIFICATION	AFL-057A-Z510	AFL-057A-Z530
CPU	1.1 GHz Intel® Atom™ Z510	1.6 GHz Intel® Atom™ Z530
Chipset	Intel® SCH US15W	
Motherboard	AFLMB-US15W	
Memory	Pre-installed 1 GB 533 MHz DDR2 SDRAM (system max. 2 GB)	
Front Panel	ABS/PC plastic front panel	
Chassis	Aluminum die casting chassis	
LCD Size	5.7”	
Resolution	640 x 480	
Brightness	400 cd/m^2	
Contrast Ratio	300:1	
Colors	262K	

SPECIFICATION	AFL-057A-Z510	AFL-057A-Z530
Pixel Pitch (H x V)	0.06 x 0.18	
Viewing Angle (H-V)	140/100	
LED Backlight MTBF	50,000 hrs	
Touch Screen	4-wire resistive type	
PoE	Require IEEE 802.3af 12.95 W power input Power Device PD (power-input)	
SSD	CompactFlash® Type I/II	
Audio	Realtek ALC269 HD audio codec AMP 1.5W + AMP 1.5W (internal speaker)	
I/O	1 x RS-232/422/485 serial port 1 x RJ-45 GbE Ethernet port supports IEEE 802.3af PoE/PD 1 x USB 2.0 port 1 x Reset switch 1 x 5 V DC power input connector	
Watchdog Timer	Software programmable supports 1~255 sec. system reset	
Power	5 V DC power input **OR** PoE power from RJ-45 connector (choose either one to power up the system)	
Power Adapter	25W DC power adapter (optional) -Input: 100 V AC ~ 240 V AC, 50Hz~60Hz -Output: 5 V DC	
Power Consumption	12.95 W (using PoE power)	
Mounting Feature	Panel, Wall, Arm, Stand (VESA 75 mm x 75 mm)	
Operating Temperature	-20ºC ~ 60ºC	
Storage Temperature	-20ºC ~ 60ºC	
Vibration	5 - 17Hz, 0.1" double amplitude displacement. 17 - 640Hz, 1.5G acceleration, peak to peak.	
Shock	10G Acceleration, peak to peak (11ms)	
Dimension (W x H x D)	180 mm x 135 mm x 55 mm	
Net/Gross Weight	0.8 Kg	
Front Panel Protection	IP 64 compliant	
Safety/EMC	CE, FCC, CB and CCC	

Table 1-2: AFL-057A-Z510/Z530 System Specifications

1.5 Dimensions

The dimensions of the AFL-056A-LX and AFL-057-LX flat panel PC are shown in **Figure 1-7** below.

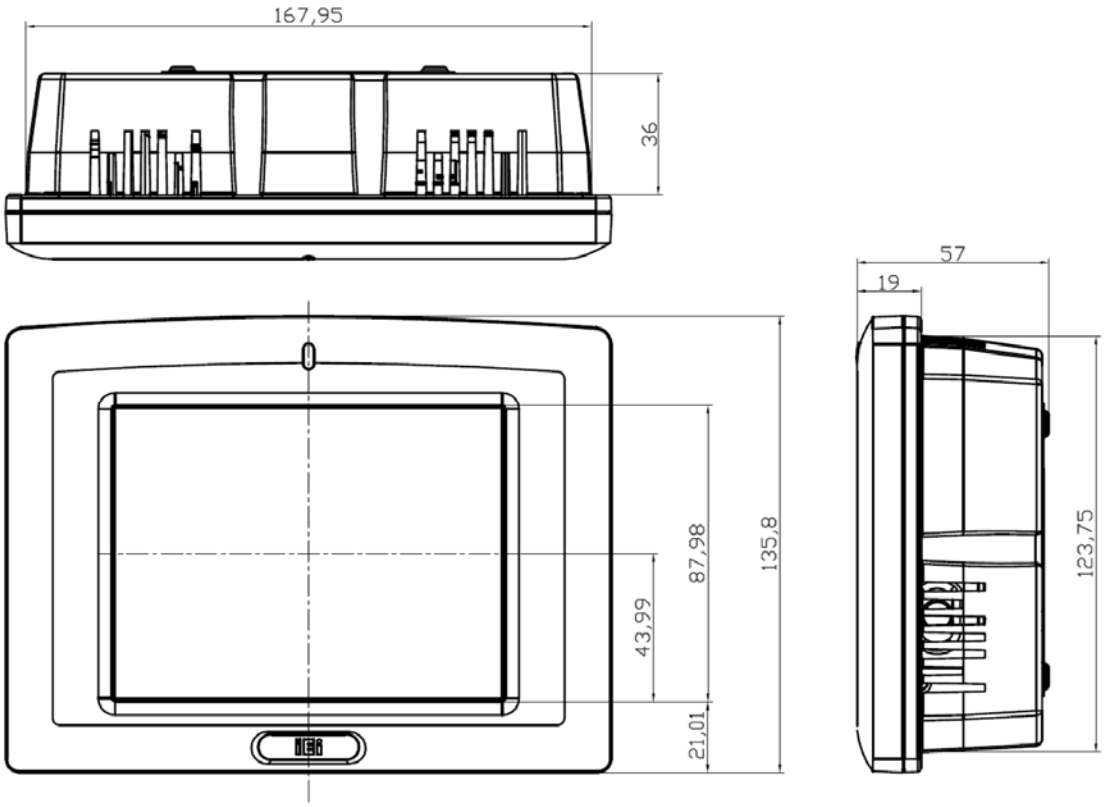


Figure 1-7: Dimensions (units in mm)

Chapter

2

Packing List

2.1 Anti-static Precautions

WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***: Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***: Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the AFL-057A-Z510/Z530 is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

2.3 Packing List

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the AFL-057A-Z510/Z530 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

The AFL-057A-Z510/Z530 is shipped with the following components:

Quantity	Item	Image
Standard		
1	AFL-057A-Z510/Z530	
1	Touch pen	
1	Screw pack	
1	User manual CD and driver CD	
1	One Key Recovery CD	

The following table lists the optional items that can be purchased separately.

Optional	
Power adapter (25 W, 90 V ~264 V AC, 50/60Hz) (P/N: 63000-FSP025DGAA1705-RS)	
Panel mount kit (P/N: ALFPK-12)	
VESA 75 wall mount kit (P/N: AFLWK-12)	
LCD monitor/PPC arm kit, load capacity of 3kg~7kg (P/N: ARM-11 -RS)	
LCD monitor/PPC stand kit for VESA 75, up to 5kg (P/N: STAND-A08-RS)	
LCD monitor/PPC stand V type for VESA 75, 0~90 degree adjustable hinge and up to 2.5kg capacity (P/N: VSTAND-A07)	
USB magnetic card reader (P/N: AFLP-08AMSR-U)	

USB hybrid card reader (P/N: AFLP-08AMSI-U)	
Industrial 6-port Lite-Managed P.O.E. Ethernet Switch with 6 x 10/100TX (P/N: IPS-2042TX)	
1 GB CompactFlash® card with Windows CE 6.0 pre-installed	
1 GB CompactFlash® card with Windows XPE pre-installed	
2 GB CompactFlash® card with Windows 7 Embedded pre-installed	

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter

3

Installation

3.1 Installation Precautions

When installing the flat panel PC, please follow the precautions listed below:

- **Power turned off**: When installing the flat panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers**: Only certified engineers should install and modify onboard functionalities.
- **Mounting**: The flat panel PC is a heavy device. When mounting the system onto a rack, panel, wall or arm please make sure that at least two people are assisting with the procedure.
- **Anti-static Discharge**: If a user open the rear panel of the flat panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear and anti-static wristband.

3.2 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the flat panel PC

Step 2: Install CF card

Step 3: Adjust COM 1 mode setting (optional)

Step 4: Mount the flat panel PC

Step 5: Connect peripheral devices to the bottom panel of the flat panel PC

Step 6: Configure the system

3.3 CF Card Installation

The AFL-057A-Z510/Z530 has one CF Type II slot inside the rear panel. To install the CF card, follow the instructions below.

Step 1: Remove the nine retention screws (**Figure 3-1**) and lift the cover off the flat panel PC.

Figure 3-1: Back Cover Retention Screws

Step 2: Lift the cover off and pull down the cover a bit to make it possible to lift the cover further more after removing the nine retention screws. Push the power switch while lifting the back cover. More strength is required to separate the cover from the chassis.

Step 3: Locate the CF slot. Insert a CF card into the slot (**Figure 3-2**).

Figure 3-2: CF Card Location

Step 4: Replace the plastic back cover. A bit of force is needed when pushing the bottom part of the cover down to the chassis.

Step 5: Once replaced reinsert the nine previously removed retention screws.

3.4 Jumper Settings

There are four DIP switches for selecting the COM 1 mode. These switches can be found on the motherboard installed in the AFL-057A-Z510/Z530. Before the AFL-057A-Z510/Z530 is installed, the jumpers must be set in accordance with the desired configuration. The settings are listed below.

3.4.1 Access the Switches

To access the DIP switches, remove the back cover. To remove the back cover, please refer to **Section 3.3 Step 1 ~ Step 2**.

3.4.2 COM1 RS-232/422/485 Serial Port Select

Jumper Label:	**SW1, SW2, SW3** and **SW4**
Jumper Settings:	See **Table 3-1**
Jumper Location:	See **Figure 3-3**

The COM1 RS-232/422/485 Serial Port Select Switches set the communication protocol used by the first serial communications port (COM1) as RS-232, RS-422 or RS-485. The COM1 RS-232/422/485 Serial Port Select settings are shown in **Table 3-1**.

SW1 + SW4	1	2	3	4	
RS-232	On	Off	On	Off	Default
RS-422	Off	On	Off	On	
RS-485	Off	On	Off	On	

Table 3-1: COM1 Mode Settings (SW1+SW4)

SW2	1	2	3	4	
RS-422	On	Off	On	Off	
RS-485	Off	On	Off	On	Default

Table 3-2: COM1 Mode Settings (SW2)

SW3	1	2	3	4	
RS-232	Off	On	Off	Off	Default
RS-422	On	Off	On	Off	
RS-485	On	Off	Off	On	

Table 3-3: COM1 Mode Settings (SW3)

The COM1 RS-232/422/485 Serial Port Select Switch locations are shown in **Figure 3-3** below.

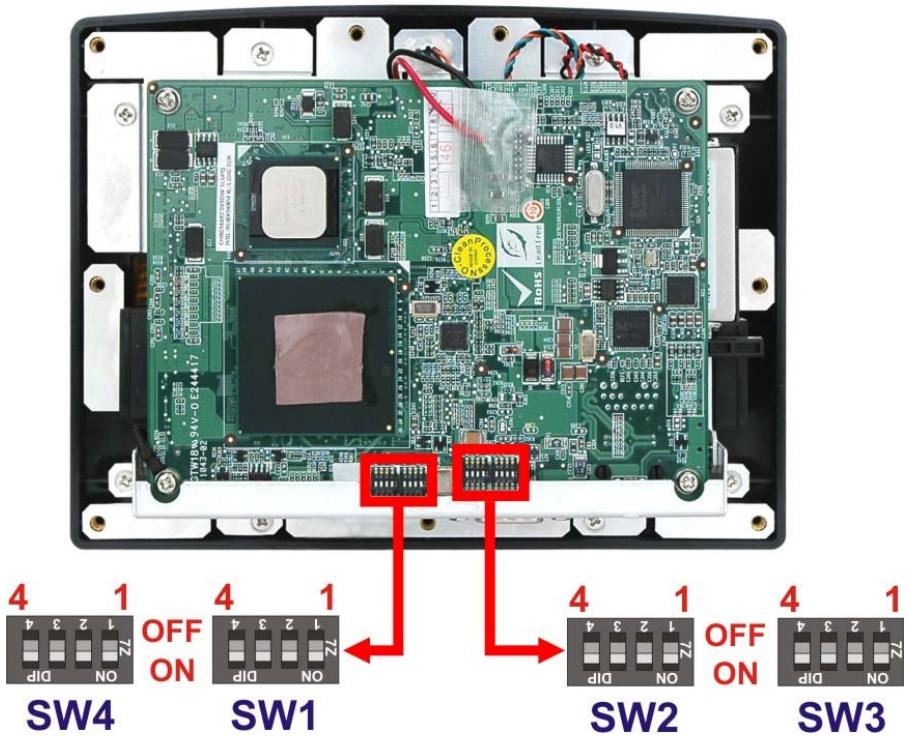


Figure 3-3: COM1 RS-232/422/485 Serial Port Select Switch Locations

3.4.2.1 COM1 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 1 are detailed below.

COM 1	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 3-4: RS-422 Pinouts

COM 1	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 3-5: RS-485 Pinouts

3.5 Mounting the System

WARNING!

When mounting the flat panel PC onto an arm, onto the wall or onto a panel, it is better to have more than one person to help with the installation to make sure the panel PC does not fall down and get damaged.

The three methods of mounting the AFL-057A-Z510/Z530 are listed below.

- Wall mounting
- Panel mounting
- Arm/Stand mounting

The four mounting methods are described below.

3.5.1 Wall Mounting

To mount the flat panel PC onto the wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four brackets screw holes on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 3-4**).

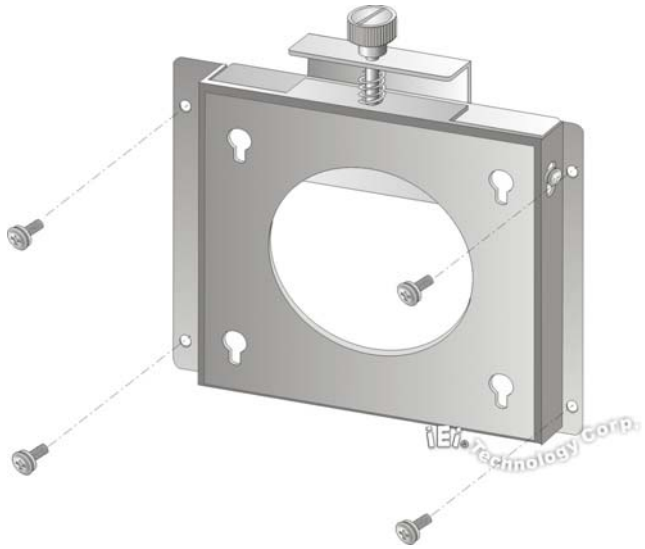


Figure 3-4: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the flat panel PC and tighten until the screw shank is secured against the rear panel (**Figure 3-5**).

Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 3-5**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

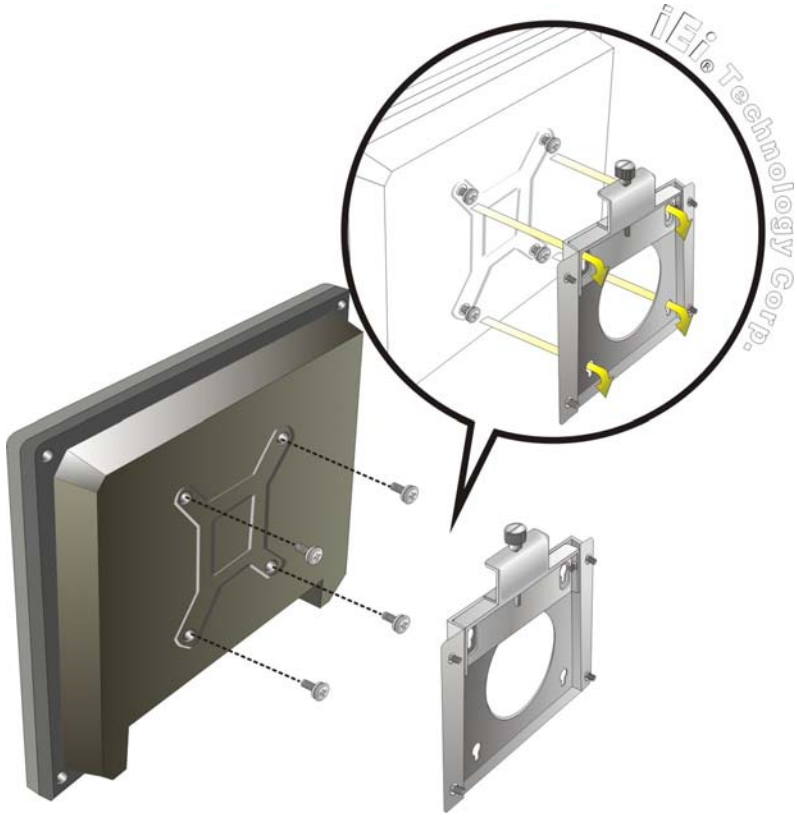


Figure 3-5: Chassis Support Screws

NOTE:

In the diagram below the bracket is already installed on the wall.

Step 1: Secure the panel PC by fastening the retention screw of the wall-mounting bracket. (**Figure 3-6**).

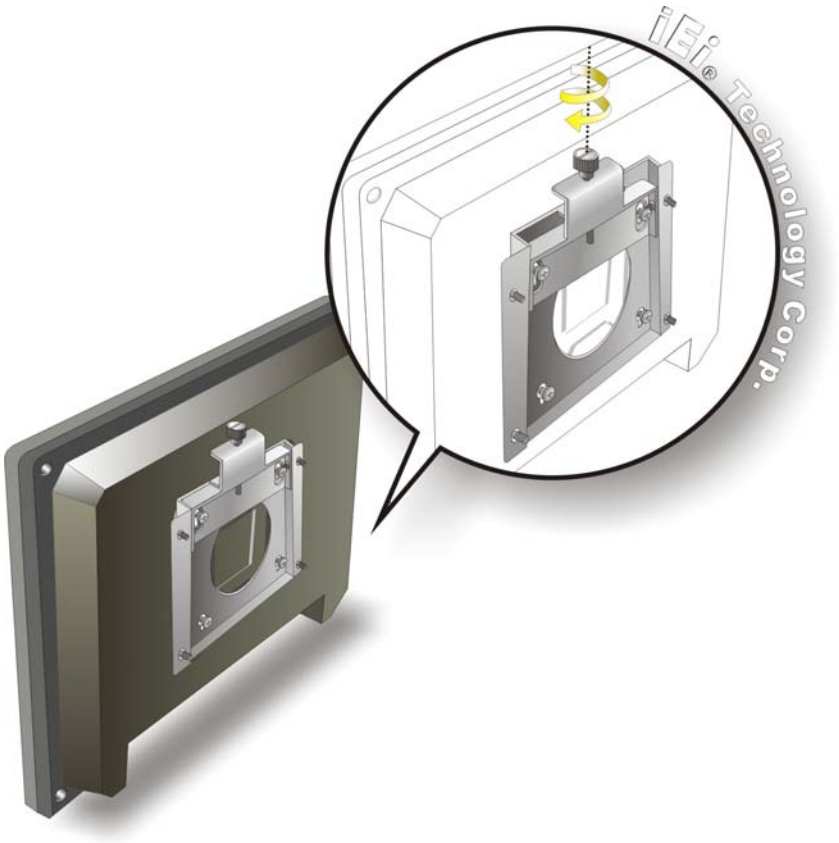


Figure 3-6: Secure the Panel PC

3.5.2 Panel Mounting

To mount the AFL-057A-Z510/Z530 flat panel PC into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the flat panel PC.

Step 2: Cut out a section from the panel that corresponds to the rear panel dimensions of the flat panel PC. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the flat panel PC but just large enough for the rear panel of the flat panel PC to fit through (**Figure 3-7**).

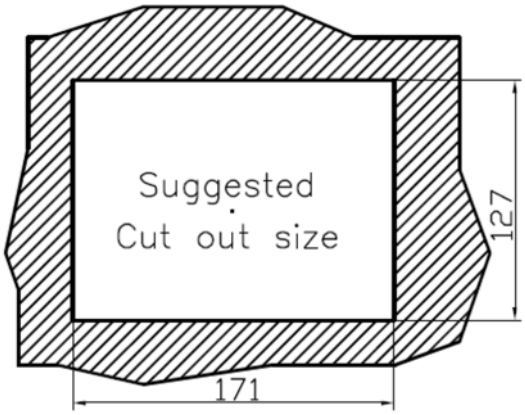


Figure 3-7: Panel Opening

Step 3: Slide the flat panel PC through the hole until the aluminum frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the aluminum frame. There are a total of 4 panel mounting clamps on the AFL-057A-Z510/Z530.

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 3-8**).

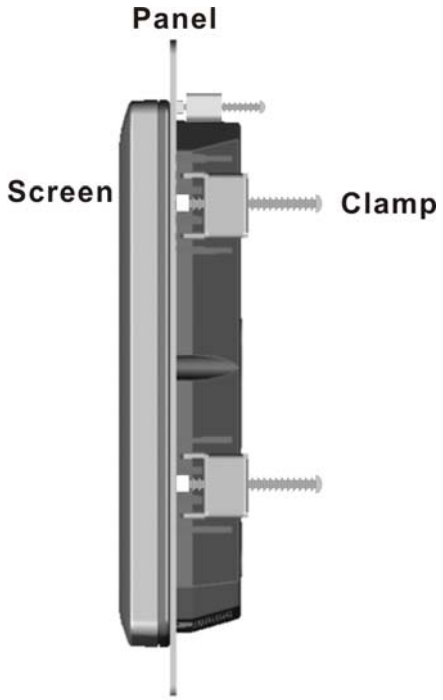


Figure 3-8: Tighten the Panel Mounting Clamp Screws

3.5.3 Arm/Stand Mounting

The AFL-057A-Z510/Z530 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75mm interface pad. To mount the AFL-057A-Z510/Z530 on an arm, please follow the steps below.

Step 1: The arm/stand is a separately purchased item. Please correctly mount the arm/stand. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm/stand please ensure that it is VESA compliant and that the arm has a 75mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL-057A-Z510/Z530 flat panel PC.

Step 2: Once the mounting arm/stand has been firmly attached to the surface, lift the flat panel PC onto the interface pad of the mounting arm.

Step 3: Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The arm mount retention screw holes are shown in **Figure 3-9**.

Figure 3-9: Arm/Stand Mounting Retention Screw Holes

Step 4: Secure the flat panel PC to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the flat panel PC.

3.6 Bottom Panel Connectors

3.6.1 LAN Connection (PoE Supported)

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network and provides power to the system. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connector** on the bottom panel of the AFL-057A-Z510/Z530.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with the RJ-45 connector on the bottom panel of the AFL-057A-Z510/Z530. See **Figure 3-10**.

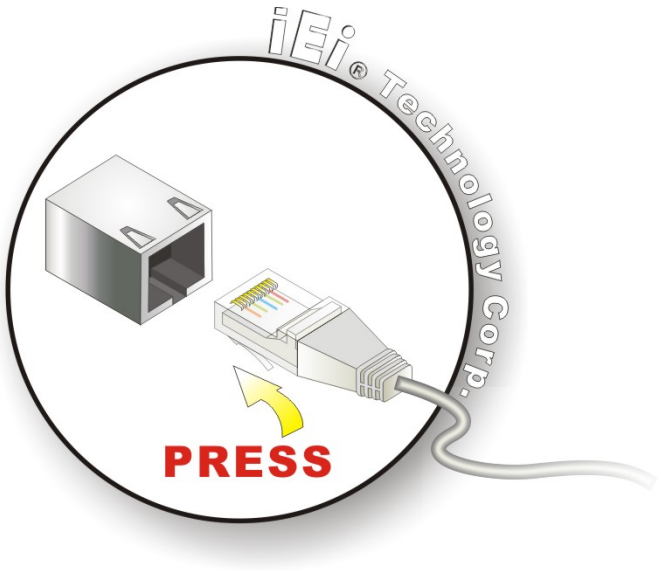


Figure 3-10: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

3.6.1.1 GbE LAN Connector Pinouts

The pinouts of the GbE LAN connector on the bottom panel are listed below.

Pin	Description	Pin	Description
1	MDI0+	10	MDI3-
2	MDI0-	11	+3.3Vsus
3	MDI1+	12	ACT-1
4	MDI1-	13	LINK1000 +3.3Vsus
5	N/A	14	LINK100 +3.3Vsus
6	N/A	15	GND
7	MDI2+	16	GND

Pin	Description	Pin	Description
8	MDI2-	17	N/A
9	MDI3+	18	N/A

Table 3-6: Ethernet Connector Pinouts

3.6.2 Serial Device Connection

The AFL-057A-Z510/Z530 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the AFL-057A-Z510/Z530.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 3-11.

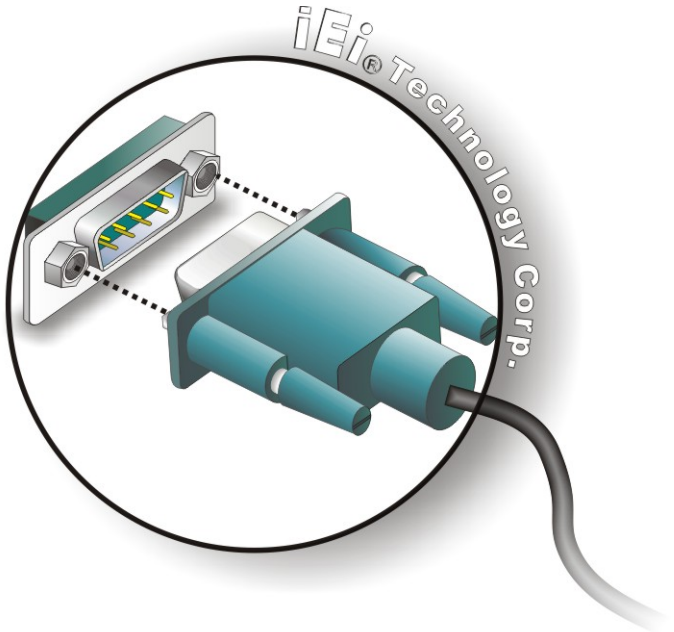


Figure 3-11: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

3.6.3 USB Device Connection

There is one external USB 2.0 connector. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The location of the USB connector is shown in **Chapter 2**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 3-12**.

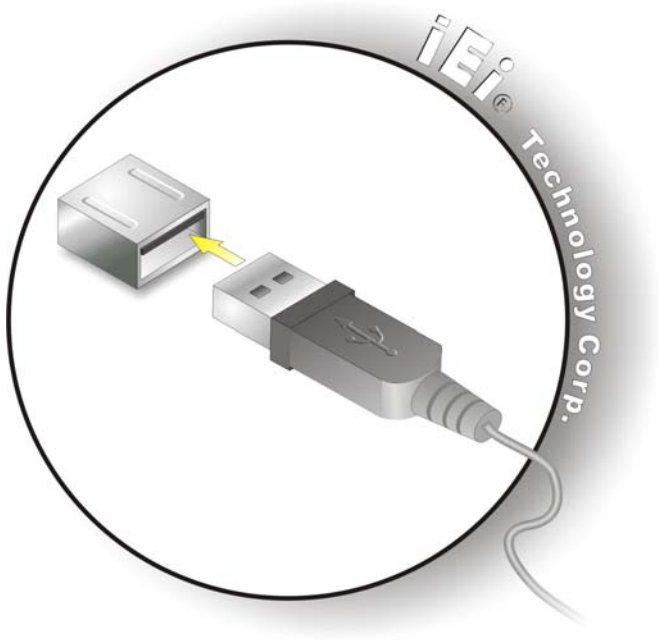


Figure 3-12: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

3.7 Power-On Procedure

3.7.1 Installation Checklist

WARNING:

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

WARNING:

The AFL-057A-Z510/Z530 includes a 5 V DC power input connector and a RJ-45 connector for PoE power. The user must choose either one to power-up the system. **DO NOT** use the 5 V DC power and PoE at the same time.

To power on the embedded system please make sure of the following:

- The memory module is installed
- The CF card is installed
- The bottom cover is installed
- All peripheral devices are connected
- The system is securely mounted

3.7.2 Power-on Procedure (PoE)

To power-on the AFL-057A-Z510/Z530 using PoE, please follow the steps below:

Step 1: Connect a Cat 5 Ethernet cable to the RJ-45 connector of the AFL-057A-Z510/Z530.

Figure 3-13: RJ-45 Connector with PoE Support

Step 2: Connect the other end of the Cat 5 cable to a PoE-enabled networking device, such as the IPS-2042TX Ethernet switch which can be purchased from IEI.

Figure 3-14: IPS-2042TX Ethernet Switch

Step 3: Connect the PoE-enabled networking device to the power outlet.

Step 4: The power LED on the front panel of the AFL-057A-Z510/Z530 will turn to green.

Figure 3-15: Power LED

3.7.3 Power-on Procedure (Optional Power Adapter)

To power-on the AFL-057A-Z510/Z530 through 5 V DC power, please follow the steps below:

Step 1: Connect the optional power adapter to the power connector of the AFL-057A-Z510/Z530.

Figure 3-16: Power Connector

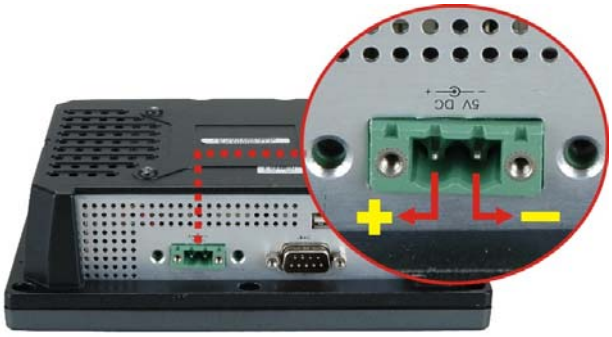
Step 2: Connect the power adapter to the power outlet.

Step 3: The power LED on the front panel of the AFL-057A-Z510/Z530 will turn to green.

Figure 3-17: Power LED

NOTE:

The previous model uses a terminal block as the 5 V DC input connector. Please refer to the following diagram for connecting power source to the AFL-057A-Z510/Z530.



3.8 Software Installation

All the drivers for the AFL-057A-Z510/Z530 are on the CD that came with the system. To install the drivers, please follow the steps below.

Step 1: Insert the CD into a CD drive connected to the system.

NOTE:

If the installation program doesn't start automatically:

Click "Start->My Computer->CD Drive->autorun.exe"

Step 2: The driver main menu appears (**Figure 3-18**).

Figure 3-18: Introduction Screen

Step 3: Click **AFL-057A-Z530/Z510**.

Step 4: A new screen with a list of available drivers appears (**Figure 3-19**).

Figure 3-19: Available Drivers

Step 5: Install all of the necessary drivers in this menu.

Chapter

4

System Maintenance

4.1 System Maintenance Introduction

If the components of the AFL-057A-Z510/Z530 fail they must be replaced, please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL-057A-Z510/Z530 are described below.

4.2 Motherboard Replacement

A user cannot replace the motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

4.3 Memory Module Replacement

WARNING!

Before removing the motherboard, make sure the power is off. Failing to do so may lead to severe damage of AFL-057A-Z510/Z530 and injury to the body.

WARNING!

Please take antistatic precautions when working with the internal components. The interior of the AFL-057A-Z510/Z530 contains very sensitive electronic components. These components are easily damaged by electrostatic discharge (ESD). Before working with the internal components make sure all the anti-static precautions described earlier have been observed.

The flat panel PC is preinstalled with a 1.0 GB DDR2 memory module. If the memory module fails, follow the instructions below to replace the memory module.

Step 1: Remove the back cover. See **Section 3.3** above.

Step 2: Remove the motherboard retention screws holding down the motherboard (**Figure 4-1**).

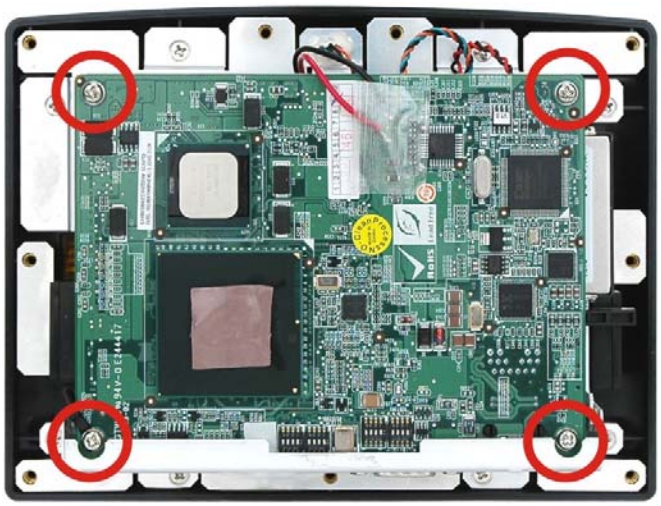


Figure 4-1: Motherboard Retention Screws

Step 3: Push the external interface connector apart from the aluminum cover and lift the aluminum cover off the AFL-057A-Z510/Z530.

Step 4: Locate the DDR2 memory module on the motherboard of the flat panel PC Remove the DDR memory module by pulling both the spring retainer clips outward from the socket.

Step 5: Grasp the DDR2 memory module by the edges and carefully pull it out of the socket.

Step 6: Install the new DDR2 memory module by pushing it into the socket at an angle (**Figure 4-2**).

Step 7: Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR2 memory module down (**Figure 4-2**).

Step 8: Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR2 memory module in the socket.

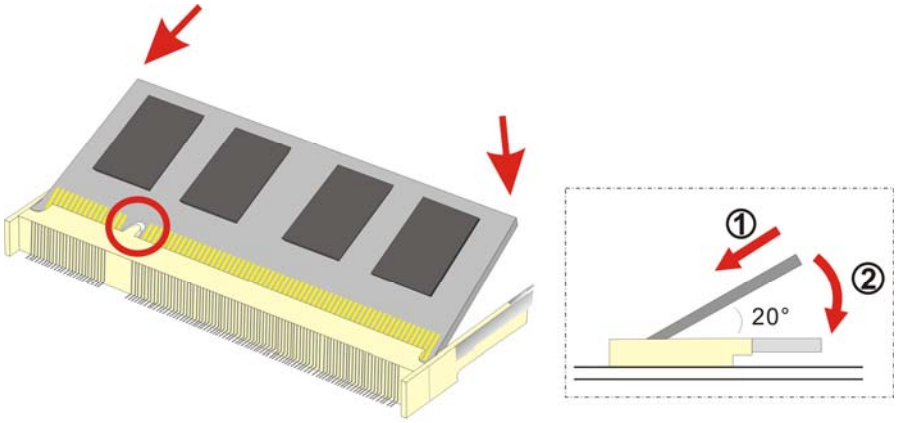


Figure 4-2: DDR2 SO-DIMM Module Installation

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in the following table.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

Key	Function
F2 /F3 key	Change color from total three colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults. Use the jumper described in **Chapter 5**.

5.1.5 BIOS Menu Bar

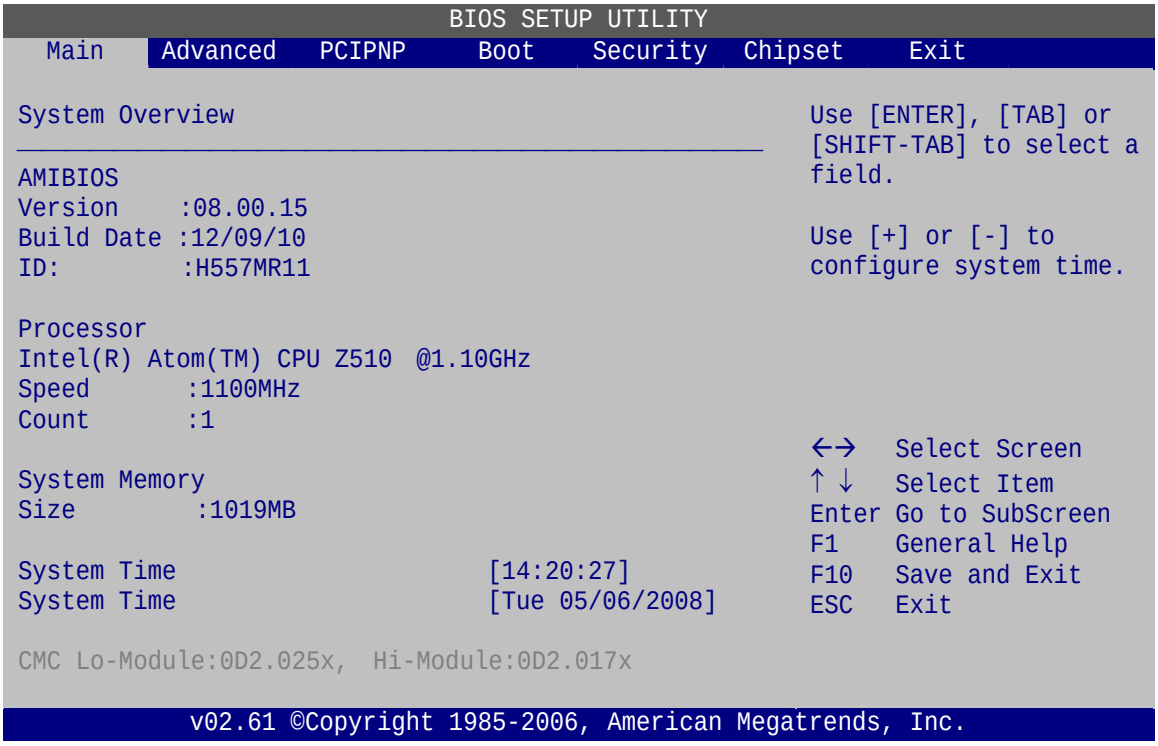
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- PCIPnP – Changes the advanced PCI/PnP Settings
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Chipset – Changes the chipset settings.
- Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- AMI BIOS: Displays auto-detected BIOS information
  - **Version:** Current BIOS version
  - **Build Date:** Date the current BIOS version was made
  - **ID:** Installed BIOS ID
- Processor: Displays auto-detected CPU specifications
  - Names the currently installed processor
  - **Speed:** Lists the processor speed
  - **Count:** The number of CPUs on the motherboard

- System Memory: Displays the auto-detected system memory.
  - **Size:** Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

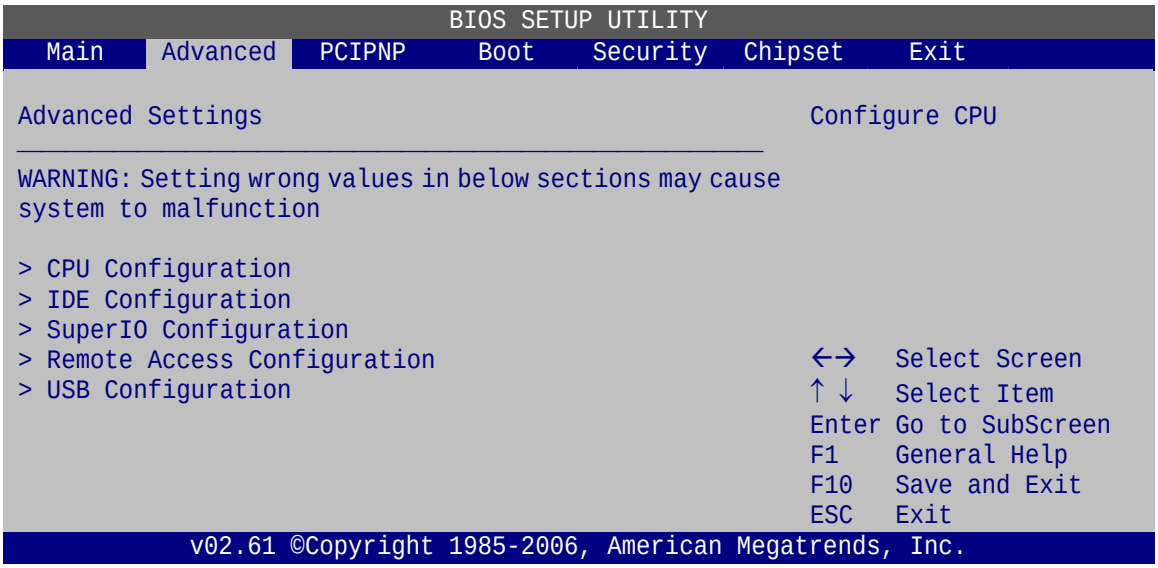
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

- CPU Configuration (see **Section 5.3.1**)
- IDE Configuration (see **Section 5.3.2**)
- Super IO Configuration (see **Section 5.3.3**)
- Remote Access Configuration (see **Section 5.3.4**)
- USB Configuration (see **Section 5.3.5**)


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Advanced Settings
Configure CPU
WARNING: Setting wrong values in below sections may cause system to malfunction
> CPU Configuration
> IDE Configuration
> SuperIO Configuration
> Remote Access Configuration
> USB Configuration
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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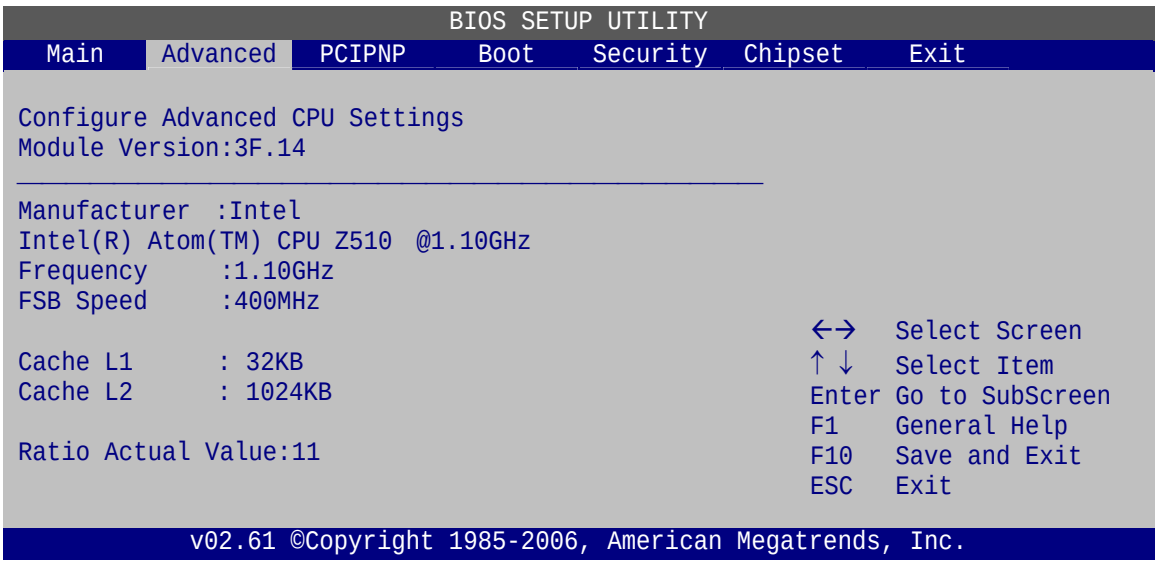
BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

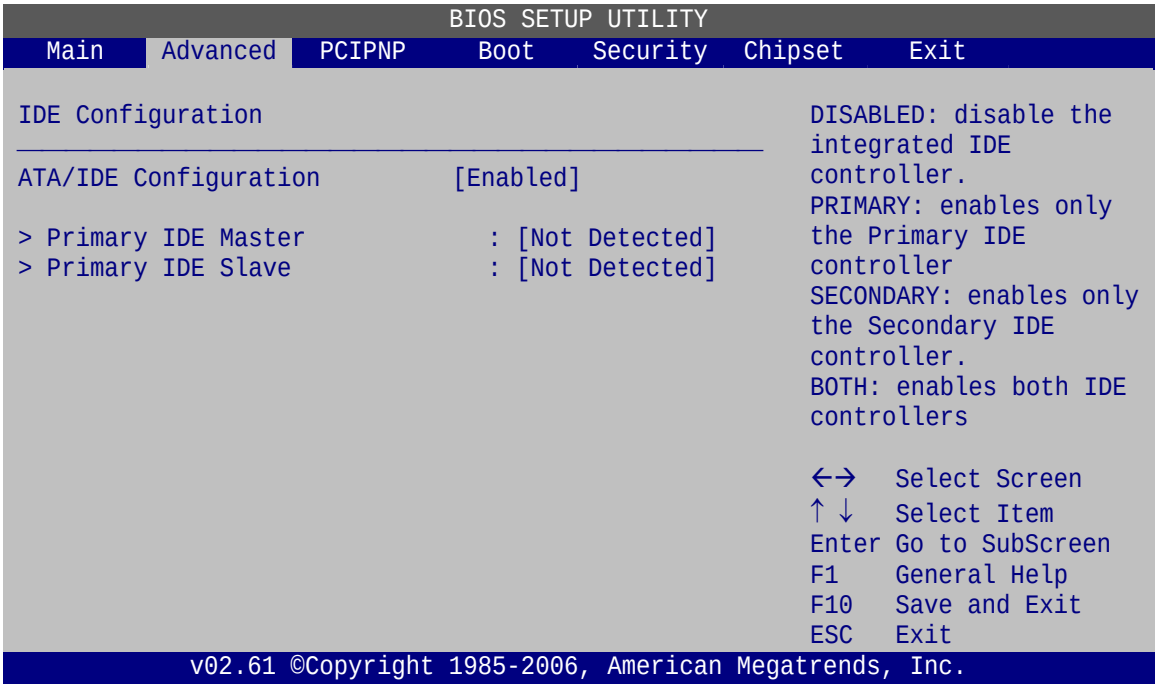
The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- Manufacturer: Lists the name of the CPU manufacturer

- Brand String: Lists the brand name of the CPU being used
- Frequency: Lists the CPU processing speed
- FSB Speed: Lists the FSB speed
- Cache L1: Lists the CPU L1 cache size
- Cache L2: Lists the CPU L2 cache size

5.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
IDE Configuration
ATA/IDE Configuration [Enabled]
> Primary IDE Master : [Not Detected]
> Primary IDE Slave : [Not Detected]
DISABLED: disable the integrated IDE controller.
PRIMARY: enables only the Primary IDE controller
SECONDARY: enables only the Secondary IDE controller.
BOTH: enables both IDE controllers
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 4: IDE Configuration

➔ **ATA/IDE Configurations [Enabled]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔	**Disabled**		Disables the on-board ATA/IDE controller.
➔	**Enabled**	**DEFAULT**	Enables the on-board ATA/IDE controller.

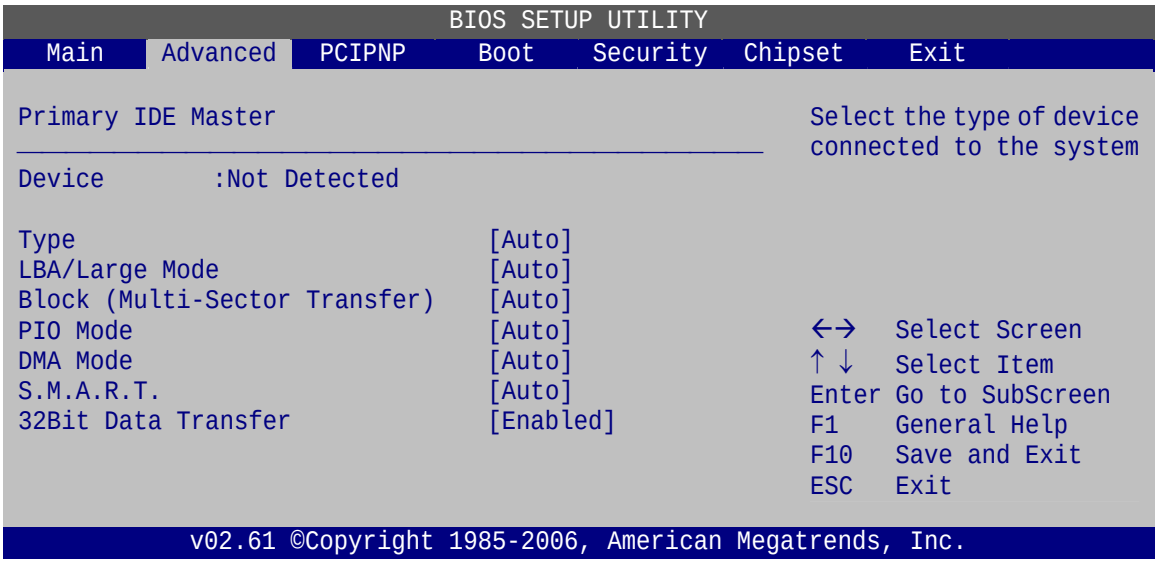
➔ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave

5.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- Device: Lists the device type (e.g. hard disk, CD-ROM etc.)
- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.

- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- PIO Mode: Indicates the PIO mode of the installed device.
- Async DMA: Indicates the highest Asynchronous DMA Mode that is supported.
- Ultra DMA: Indicates the highest Synchronous DMA Mode that is supported.
- S.M.A.R.T.: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- 32Bit Data Transfer: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ZIP LS-120

➔ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled**		BIOS is prevented from using the LBA mode control on the specified channel.
➔ **Auto**	**DEFAULT**	BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled**		BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
➔ **Auto**	**DEFAULT**	BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto**	**DEFAULT**	BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
➔ **0**		PIO mode 0 selected with a maximum transfer rate of 3.3 MB/s
➔ **1**		PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s
➔ **2**		PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s

➔ **3**		PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s
➔ **4**		PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

➔ **Auto**	**DEFAULT**	BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.

➔ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

➔ **Auto**	**DEFAULT**	BIOS auto detects HDD SMART support.
➔ **Disabled**		Prevents BIOS from using the HDD SMART feature.
➔ **Enabled**		Allows BIOS to use the HDD SMART feature

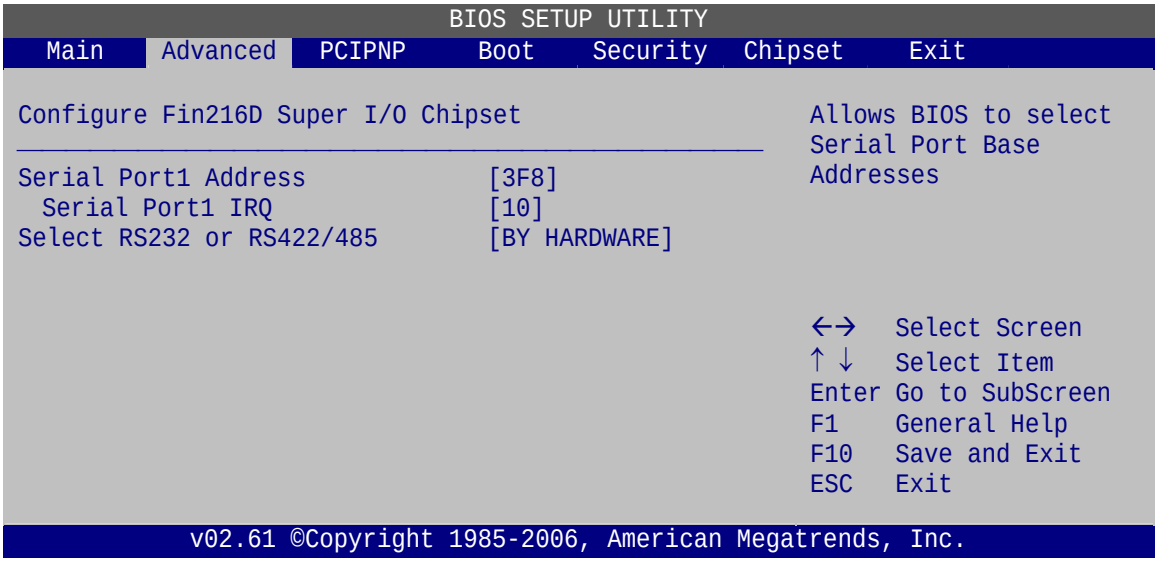
➔ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

➔ **Disabled**		Prevents the BIOS from using 32-bit data transfers.
➔ **Enabled**	**DEFAULT**	Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Configure Fin216D Super I/O Chipset
Allows BIOS to select Serial Port Base Addresses
Serial Port1 Address [3F8]
Serial Port1 IRQ [10]
Select RS232 or RS422/485 [BY HARDWARE]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 6: Super IO Configuration

➔ **Serial Port1 Address [3F8]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

➔ **Disabled**		No base address is assigned to Serial Port 1
➔ **3F8**	**DEFAULT**	Serial Port 1 I/O port address is 3F8
➔ **2F8**		Serial Port 1 I/O port address is 2F8
➔ **3E8**		Serial Port 1 I/O port address is 3E8
➔ **2E8**		Serial Port 1 I/O port address is 2E8

➔ **Serial Port1 IRQ [Normal]**

Use the **Serial Port1 IRQ** option to select the interrupt address for the first serial port.

➔ **10**	**DEFAULT**	Serial Port 1 interrupt address is 10

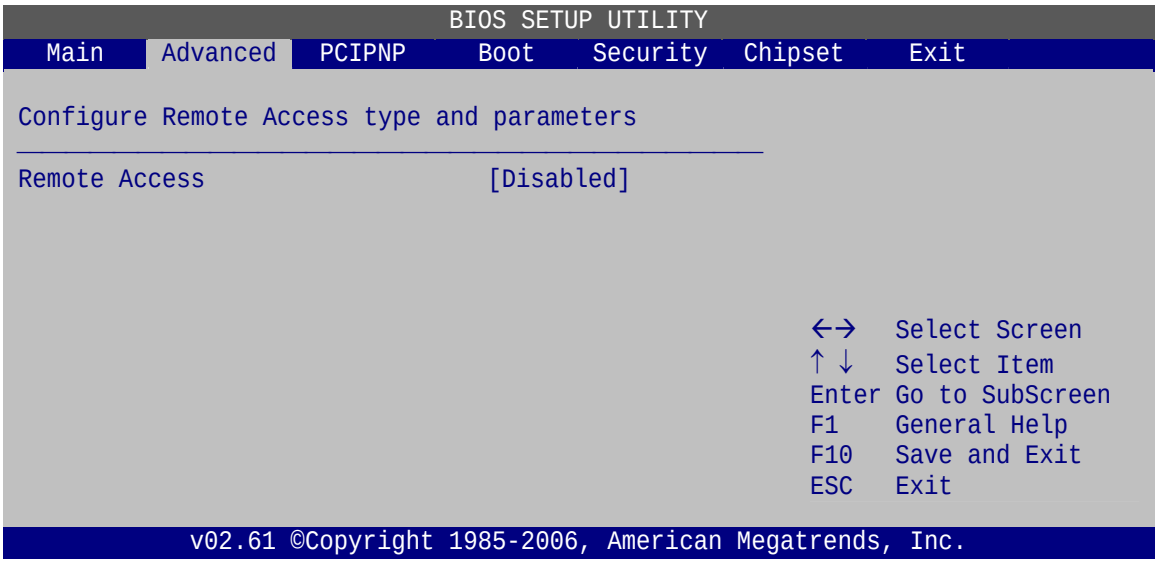
➔ **Select RS232 or RS485/RS422 [RS/232]**

Use the **Select RS232 or RS485/RS422** option to select the Serial Port 1 signaling mode.

➔ **RS232**	**DEFAULT**	Serial Port 1 signaling mode is RS-232
➔ **RS422/485**		Serial Port 1 signaling mode is RS-422/485
➔ **BY HARDWARE**		Serial Port 1 signaling mode is set by on-board jumper

5.3.4 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 7**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 7: Remote Access Configuration

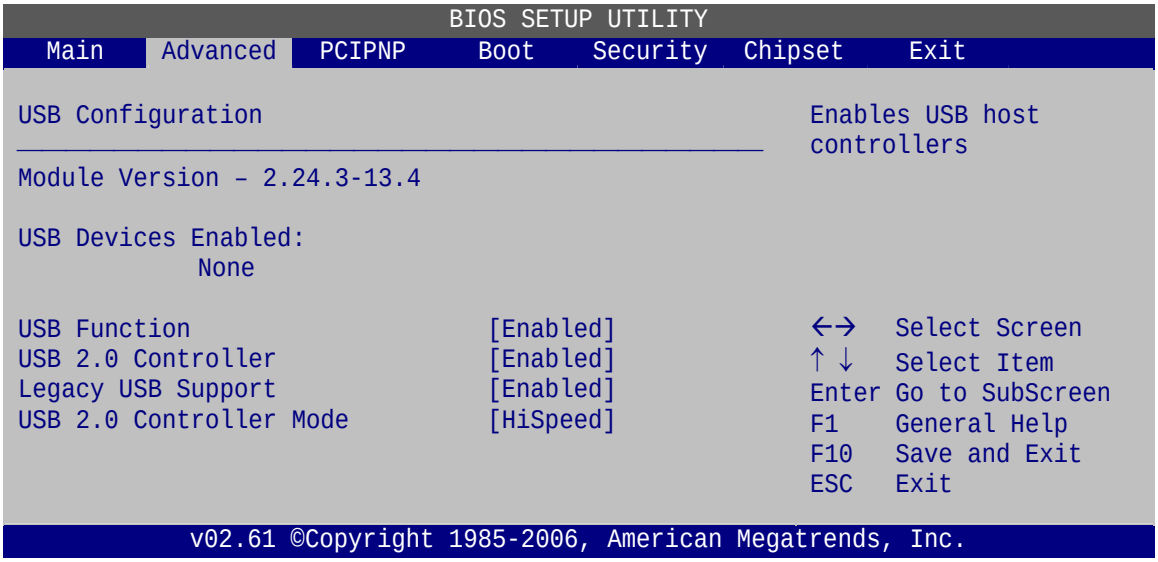
➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled**	**DEFAULT**	Remote access is disabled.

5.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 8**) to read USB configuration information and configure the USB settings.



BIOS Menu 8: USB Configuration

➔ **USB Configuration**

The **USB Configuration** field shows the system USB configuration. The items listed are:

- Module Version: x.xxxxx.xxxxx

➔ **USB Devices Enabled**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **USB Function [Enabled]**

Use the **USB Function** BIOS option to enable or disable USB function support.

➔	**Disabled**		USB function support disabled
➔	**Enabled**	**DEFAULT**	USB function support enabled

➔ **USB 2.0 Controller [Enabled]**

Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

➔ **Disabled**		USB 2.0 controller disabled
➔ **Enabled**	**DEFAULT**	USB 2.0 controller enabled

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**		Legacy USB support disabled
➔ **Enabled**	**DEFAULT**	Legacy USB support enabled
➔ **Auto**		Legacy USB support disabled if no USB devices are connected

➔ **USB2.0 Controller Mode [HiSpeed]**

Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

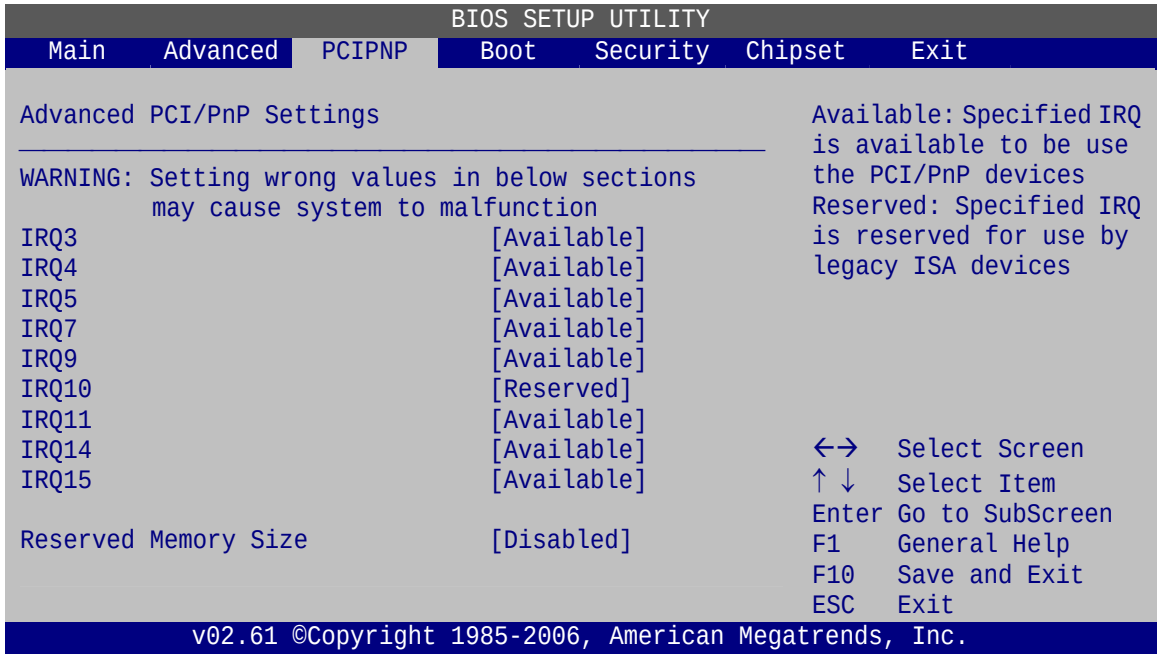
➔ **FullSpeed**		The controller is capable of operating at 12 Mb/s
➔ **HiSpeed**	**DEFAULT**	The controller is capable of operating at 480 Mb/s

5.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 9**) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections
may cause system to malfunction
IRQ3 [Available]
IRQ4 [Available]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Reserved]
IRQ11 [Available]
IRQ14 [Available]
IRQ15 [Available]
Reserved Memory Size [Disabled]
Available: Specified IRQ is available to be use the PCI/PnP devices
Reserved: Specified IRQ is reserved for use by legacy ISA devices
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 9: PCI/PnP Configuration

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**	**DEFAULT**	The specified IRQ is available to be used by PCI/PnP devices
➔ **Reserved**		The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3

- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

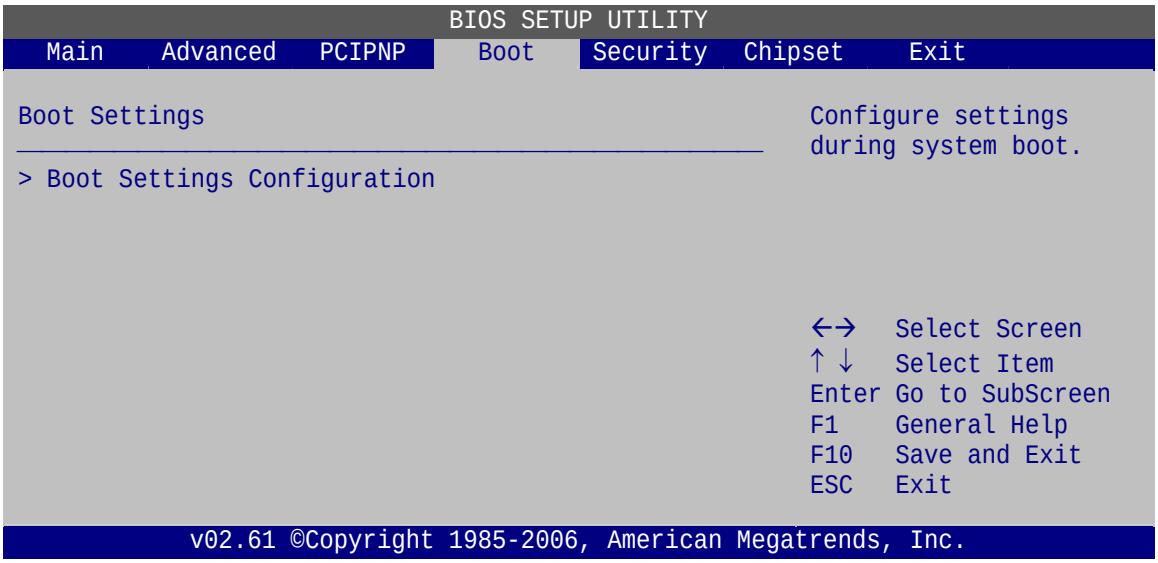
➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔	**Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔	**16K**		16 KB reserved for legacy ISA devices
➔	**32K**		32 KB reserved for legacy ISA devices
➔	**64K**		54 KB reserved for legacy ISA devices

5.5 Boot

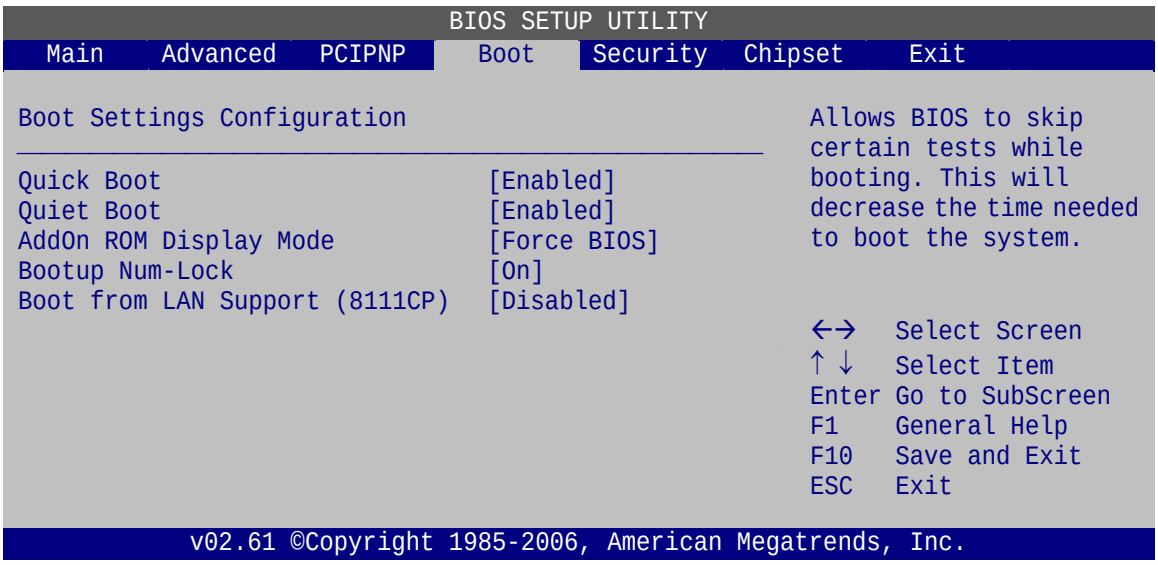
Use the **Boot** menu (**BIOS Menu 10**) to configure system boot options.



BIOS Menu 10: Boot

5.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 11**) to configure advanced system boot options.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Boot Settings Configuration
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
Quick Boot [Enabled]
Quiet Boot [Enabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
Boot from LAN Support (8111CP) [Disabled]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 11: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**	Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **Boot From LAN Support (8111CP) [Disabled]**

Use the **BOOT From LAN Support (8111CP)** option to enable the Intel® 8111CP PCIe GbE controller to boot the system.

➔ **Disabled** **DEFAULT** Cannot be booted from a remote system through the Intel® 8111CP PCIe GbE controller

➔ **Enabled** Can be booted from a remote system through the Intel® 8111CP PCIe GbE controller

5.6 Security

Use the **Security** menu (**BIOS Menu 12**) to set system and user passwords.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Security Settings
_____________________________________________________________

Supervisor Password    :Not Installed
User Password          :Not Installed

Change Supervisor Password
Change User Password
                                                  ←→   Select Screen
                                                  ↑ ↓   Select Item
                                                  Enter Go to SubScreen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

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```

BIOS Menu 12: Security

➔ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

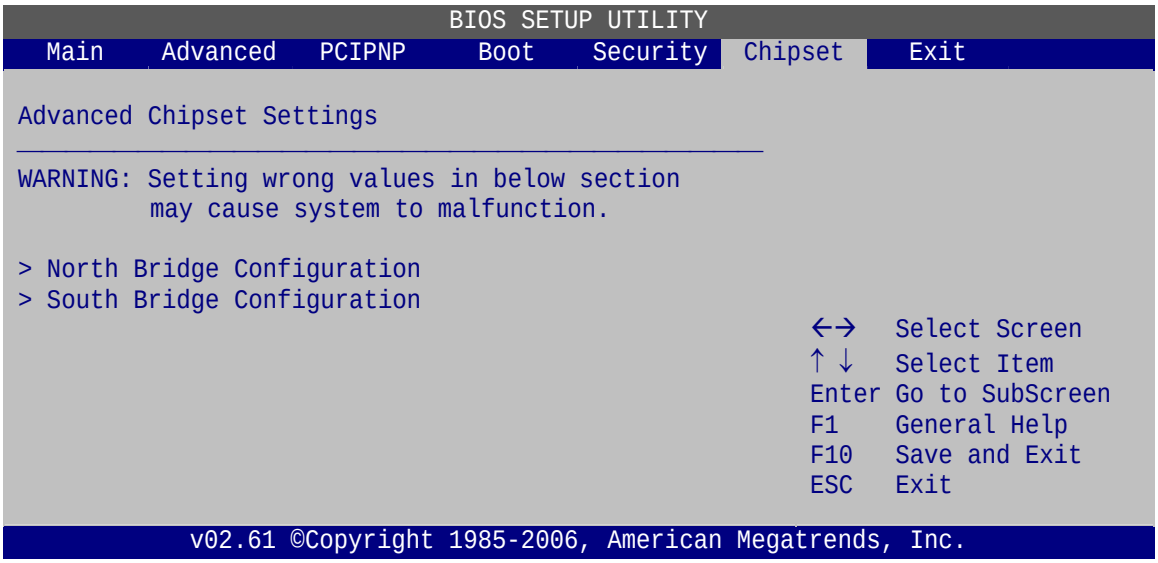
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 13**) to access the Northbridge and Southbridge configuration menus.

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below section
may cause system to malfunction.
> North Bridge Configuration
> South Bridge Configuration
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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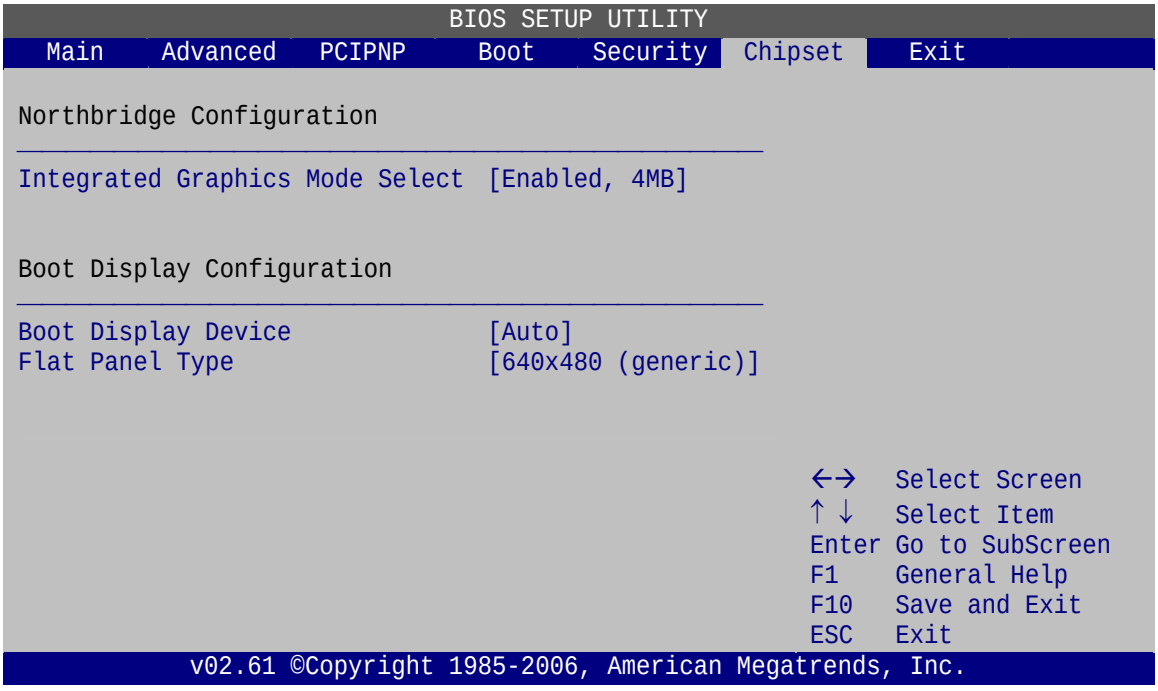
BIOS Menu 13: Chipset

5.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 14**) to configure the Northbridge chipset.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Northbridge Configuration
Integrated Graphics Mode Select [Enabled, 4MB]
Boot Display Configuration
Boot Display Device [Auto]
Flat Panel Type [640x480 (generic)]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 14:Northbridge Chipset Configuration

➔ **Integrated Graphics Mode Select [Enable, 4 MB]**

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**		
➔ **Enable, 1 MB**		1 MB of memory used by internal graphics device
➔ **Enable, 4 MB**	**DEFAULT**	4 MB of memory used by internal graphics device
➔ **Enable, 8 MB**		8 MB of memory used by internal graphics device

➔ **Boot Display Device [Auto]**

Use the **Boot Display Device** option to select the display device used by the system when it boots. Configuration options are listed below.

- Auto **Default**
- LVDS
- CRT

➔ **Flat Panel Type [640x480 (generic)]**

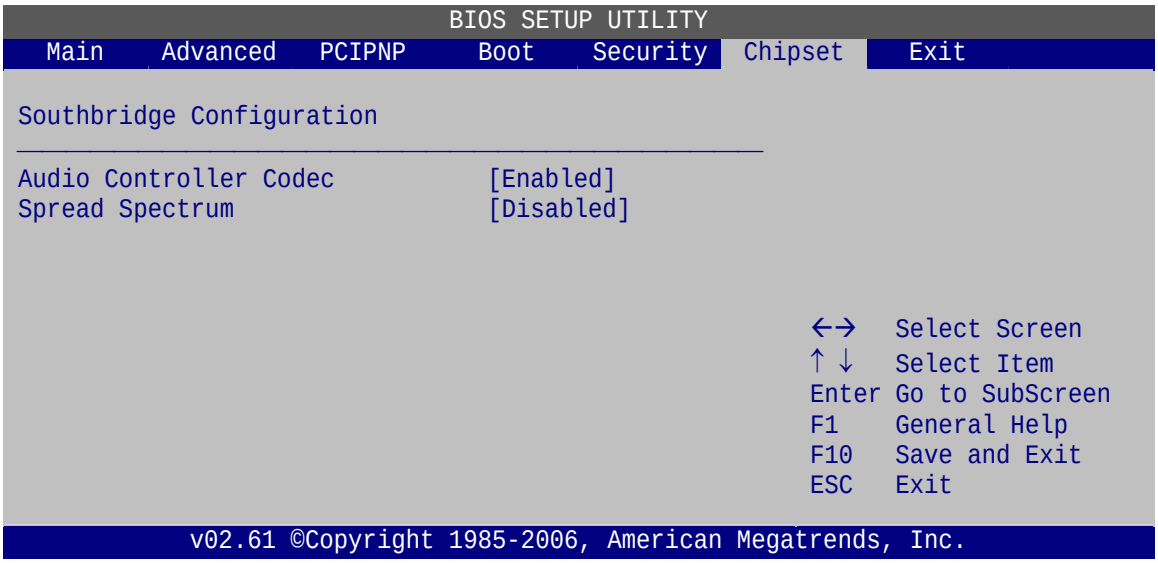
Use the **Flat Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 (generic) **Default**
- 800x600 (generic)
- 1024x768 (generic)
- 640x480 (NEC 8.4”)
- 800x480 (NEC 8.9”)
- 1024x600 (TMD 5.61”)
- 1024x600 (Samsung 4.8”)
- 1024x768 (Samsung 15”)
- 1280x768 (Sharp 7.2”)
- 1280x800 (Samsung 15.4”)
- 1024x768 24bit
- 800x480 24bit

- 1360x768 24bit Vesa
- 1360x768 18bit
- 1360x768 24bit

5.7.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 15**) to configure the Southbridge chipset.



BIOS Menu 15:Southbridge Chipset Configuration

➔ **Audio Controller Codec [Enabled]**

Use the **Audio Controller Codec** option to enable or disable the audio controller.

➔ **Enabled** **DEFAULT** The onboard HD audio codec automatically detected and enabled

➔ **Disabled** The onboard HD audio codec is disabled

➔ **Spread Spectrum [Disabled]**

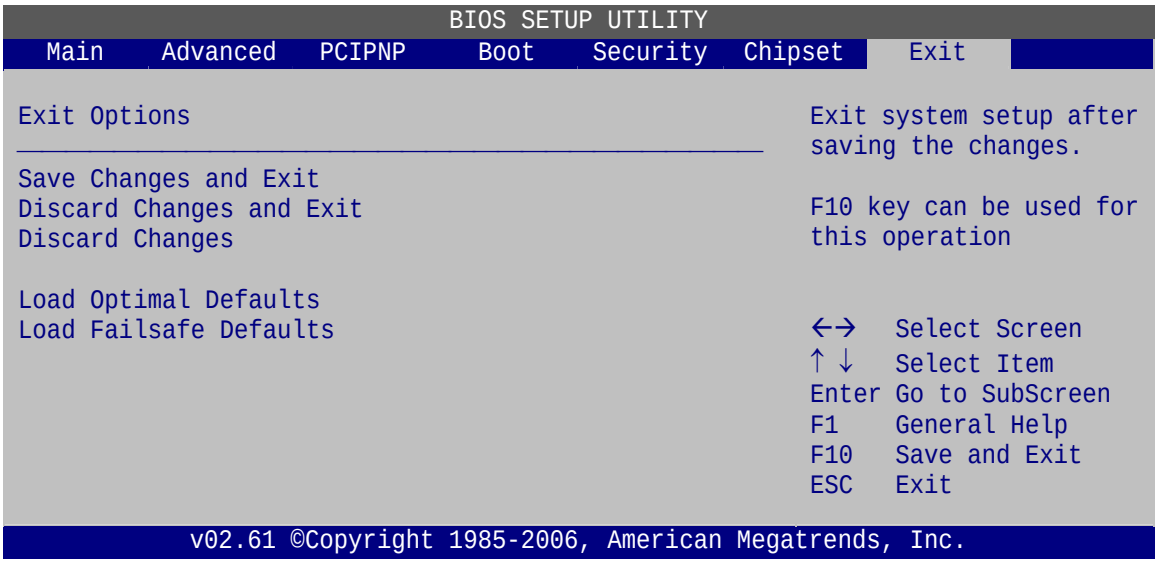
Use the **Spread Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the

EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔ **Disabled**	**DEFAULT**	EMI not reduced
➔ **Enabled**		EMI reduced

5.8 Exit

Use the **Exit** menu (**BIOS Menu 16**) to load default BIOS values, optimal failsafe values and to save configuration changes.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 16:Exit

➔ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation**.

Appendix

A

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL-057A-Z510/Z530.

A.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the AFL-057A-Z510/Z530 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the AFL-057A-Z510/Z530 is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the AFL-057A-Z510/Z530 chassis is opened when the AFL-057A-Z510/Z530 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the AFL-057A-Z510/Z530.
- ***If considerable amounts of dust, water, or fluids enter the AFL-057A-Z510/Z530***, turn off the power supply immediately, unplug the power cord, and contact the AFL-057A-Z510/Z530 vendor.
- **DO NOT** do the following:
  - **DO NOT** drop the AFL-057A-Z510/Z530 against a hard surface.
  - **DO NOT** strike or exert excessive force onto the LCD panel.
  - **DO NOT** touch any of the LCD panels with a sharp object
  - **DO NOT** use the AFL-057A-Z510/Z530 in a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the AFL-057A-Z510/Z530 may result in permanent damage to the AFL-057A-Z510/Z530 and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-057A-Z510/Z530. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-057A-Z510/Z530 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

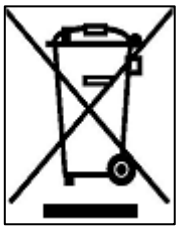
A.1.3 Product Disposal

CAUTION:

Risk of explosion if battery is replaced by and incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL-057A-Z510/Z530, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL-057A-Z510/Z530, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the AFL-057A-Z510/Z530 does not require cleaning. Keep fluids away from the AFL-057A-Z510/Z530 interior.
- Be cautious of all small removable components when vacuuming the AFL-057A-Z510/Z530.
- Turn the AFL-057A-Z510/Z530 off before cleaning the AFL-057A-Z510/Z530.
- Never drop any objects or liquids through the openings of the AFL-057A-Z510/Z530.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the AFL-057A-Z510/Z530.
- Avoid eating, drinking and smoking within vicinity of the AFL-057A-Z510/Z530.

A.2.2 Cleaning Tools

Some components in the AFL-057A-Z510/Z530 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the AFL-057A-Z510/Z530.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the AFL-057A-Z510/Z530.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the AFL-057A-Z510/Z530.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the AFL-057A-Z510/Z530 as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the AFL-057A-Z510/Z530. Dust and dirt can restrict the airflow in the AFL-057A-Z510/Z530 and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

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DMA Mode [Auto] 49
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Serial Port1 Address [3F8] 50
Serial Port1 IRQ [Normal] 50
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Appendix

C

One Key Recovery

C.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

The IEI One Key Recovery tool menu is shown below.

Figure C-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure C-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section C.2.1**)
2. Create partitions (see **Section C.2.2**)
3. Install operating system, drivers and system applications (see **Section C.2.3**)
4. Build-up recovery partition (see **Section C.2.4**)
5. Create factory default image (see **Section C.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The detailed information of each function is described in **Section C.4**.

NOTE:

The initial setup procedures for Linux system are described in **Section C.3**.

C.1.1 System Requirement

NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

C.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)
  - Ubuntu 8.10 (Intrepid)
  - Ubuntu 7.10 (Gutsy)
  - Ubuntu 6.10 (Edgy)
  - Debian 5.0 (Lenny)
  - Debian 4.0 (Etch)
  - SuSe 11.2
  - SuSe 10.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

C.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore Windows system, a few setup procedures are required.

Step 1: Hardware and BIOS setup (see **Section C.2.1**)

Step 2: Create partitions (see **Section C.2.2**)

Step 3: Install operating system, drivers and system applications (see **Section C.2.3**)

Step 4: Build-up recovery partition (see **Section C.2.4**)

Step 5: Create factory default image (see **Section C.2.5**)

The detailed descriptions are described in the following sections.

NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps described in **Section C.3**.

C.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the system and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

C.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

Step 1: Put the recovery CD in the optical drive of the system.

Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

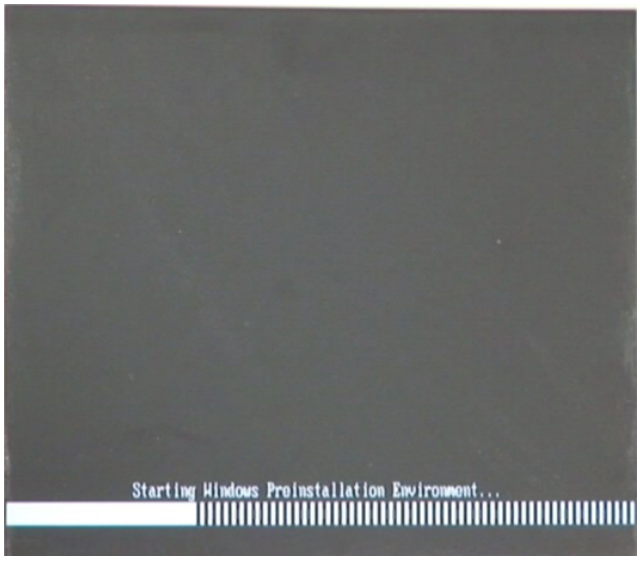


Figure C-2: Launching the Recovery Tool

Step 3: The recovery tool setup menu is shown as below.

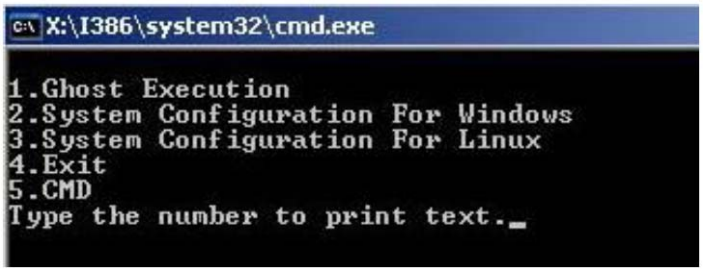


Figure C-3: Recovery Tool Setup Menu

Step 4: Press <**5**> then <Enter>.

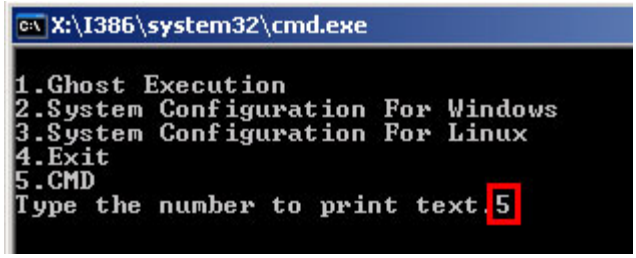


Figure C-4: Command Mode

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>create part pri size= ___

DISKPART>assign letter=F

DISKPART>exit

system32>format N: /fs:ntfs /q /y

```
system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit
```

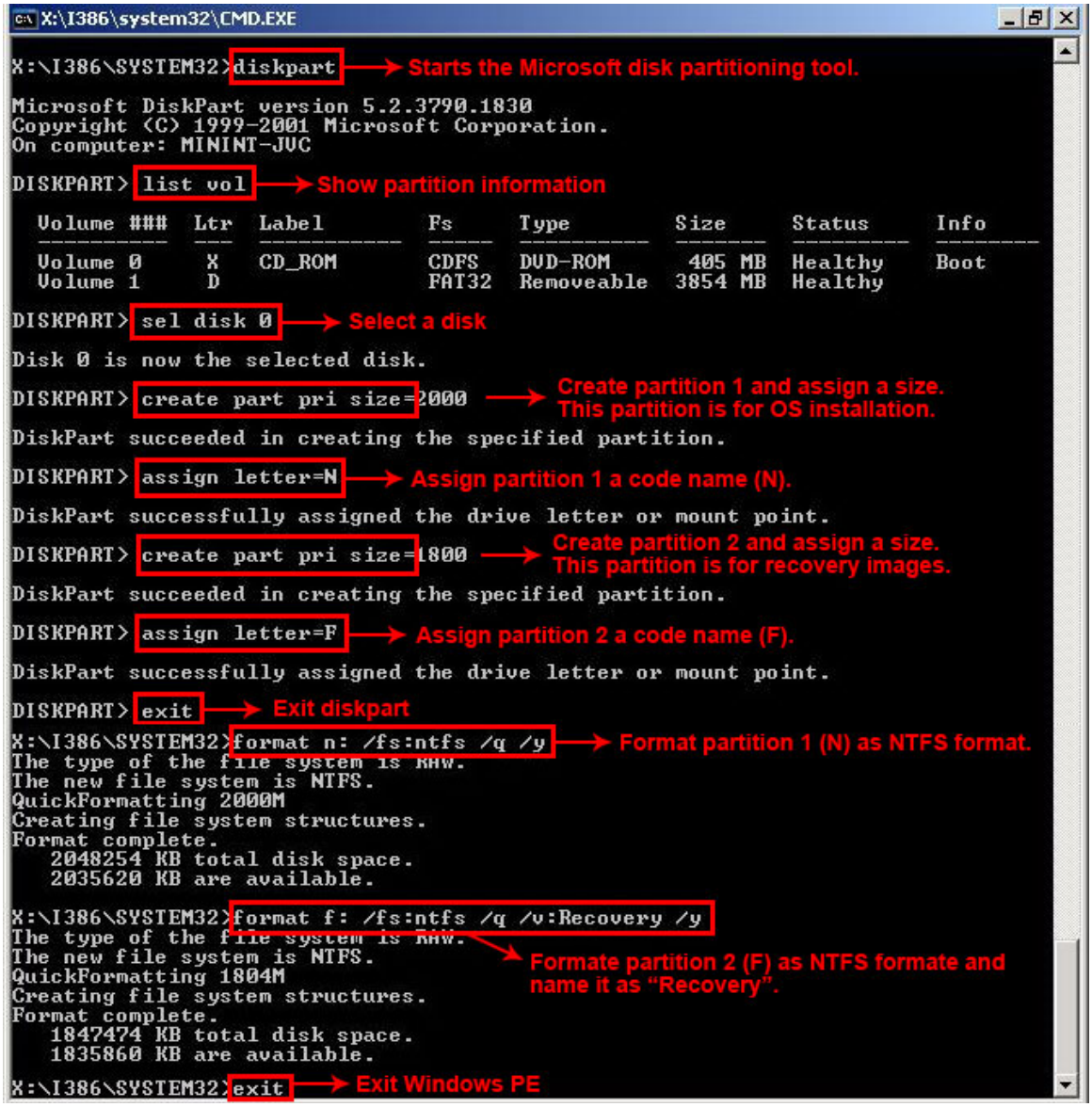
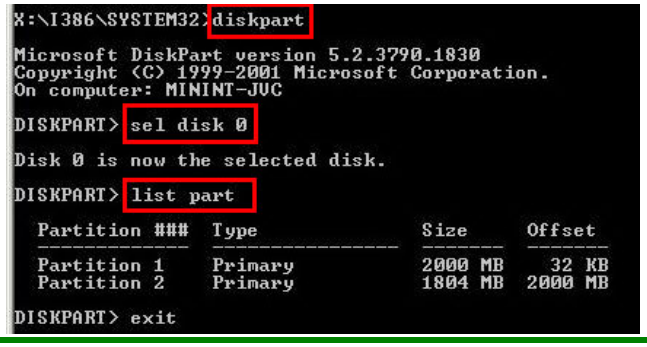

X:\I386\system32\CMD.EXE
X:\I386\SYSTEM32>diskpart
Starts the Microsoft disk partitioning tool.
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC
DISKPART> list vol
Show partition information
Volume ### Ltr Label Fs Type Size Status Info
Volume 0 X CD_ROM CDFS DVD-ROM 405 MB Healthy Boot
Volume 1 D FAT32 Removeable 3854 MB Healthy
DISKPART> sel disk 0
Select a disk
Disk 0 is now the selected disk.
DISKPART> create part pri size=2000
Create partition 1 and assign a size.
This partition is for OS installation.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=N
Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> create part pri size=1800
Create partition 2 and assign a size.
This partition is for recovery images.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=F
Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> exit
Exit diskpart
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y
Format partition 1 (N) as NTFS format.
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
2048254 KB total disk space.
2035620 KB are available.
X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
1847474 KB total disk space.
1835860 KB are available.
Formate partition 2 (F) as NTFS formate and
name it as "Recovery".
X:\I386\SYSTEM32>exit
Exit Windows PE

Figure C-5: Partition Creation Commands

NOTE:

Use the following commands to check if the partitions were created successfully.


X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC
DISKPART> sel disk 0
Disk 0 is now the selected disk.
DISKPART> list part
Partition ### Type Size Offset
Partition 1 Primary 2000 MB 32 KB
Partition 2 Primary 1804 MB 2000 MB
DISKPART> exit

Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

C.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

NOTE:

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

C.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

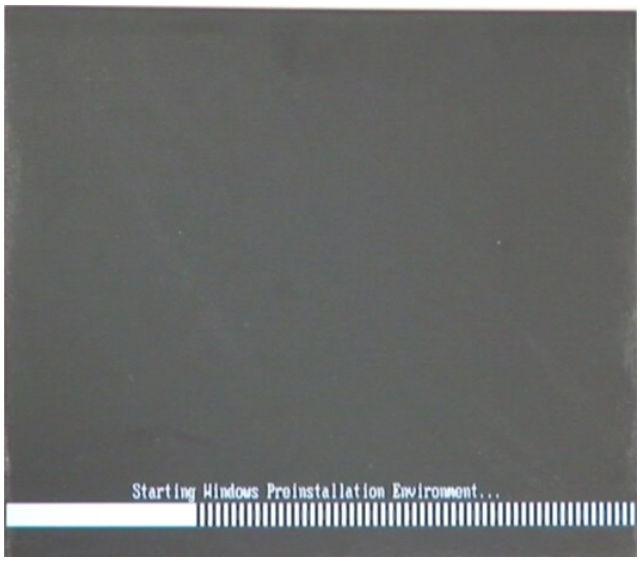


Figure C-6: Launching the Recovery Tool

Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.

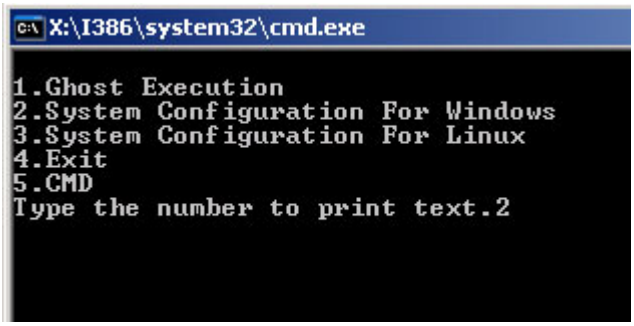


Figure C-7: System Configuration for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for recovery files in **Section C.2.2** is hidden and the recovery tool is saved in this partition.

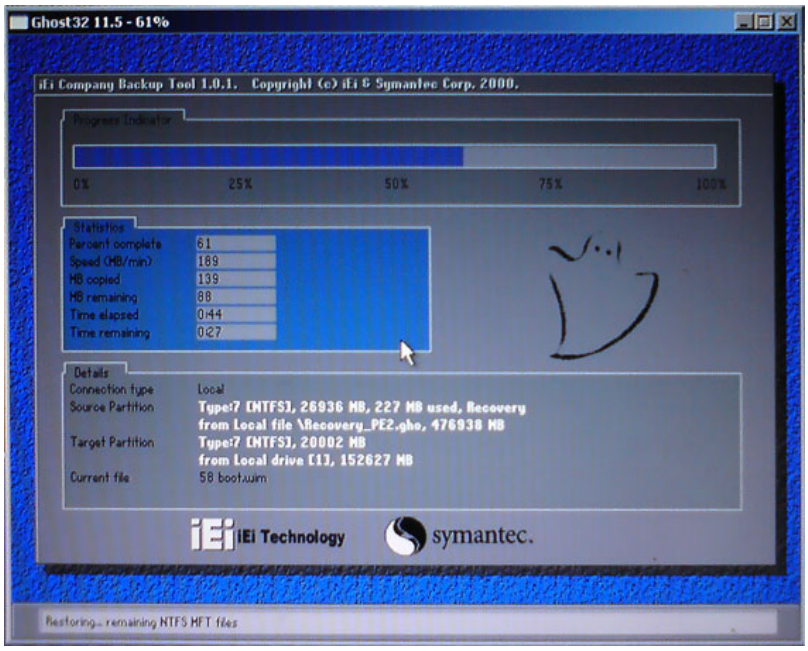


Figure C-8: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

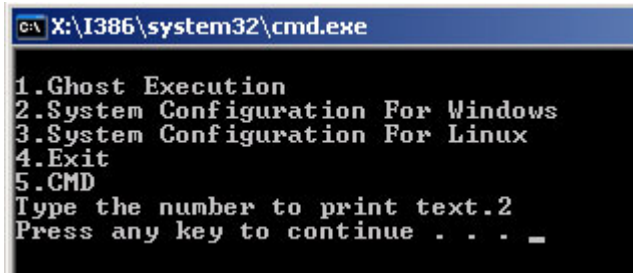


Figure C-9: Press any key to continue

Step 7: Eject the recovery CD.

C.2.5 Create Factory Default Image

NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure C-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

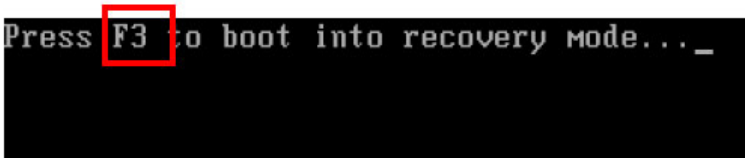


Figure C-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure C-11**)

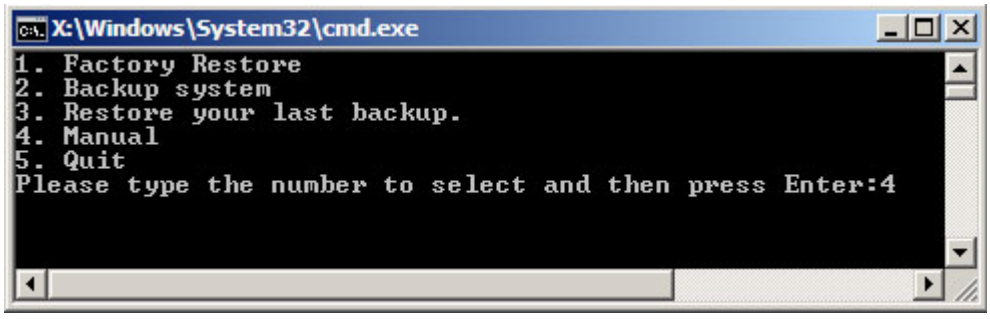


Figure C-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

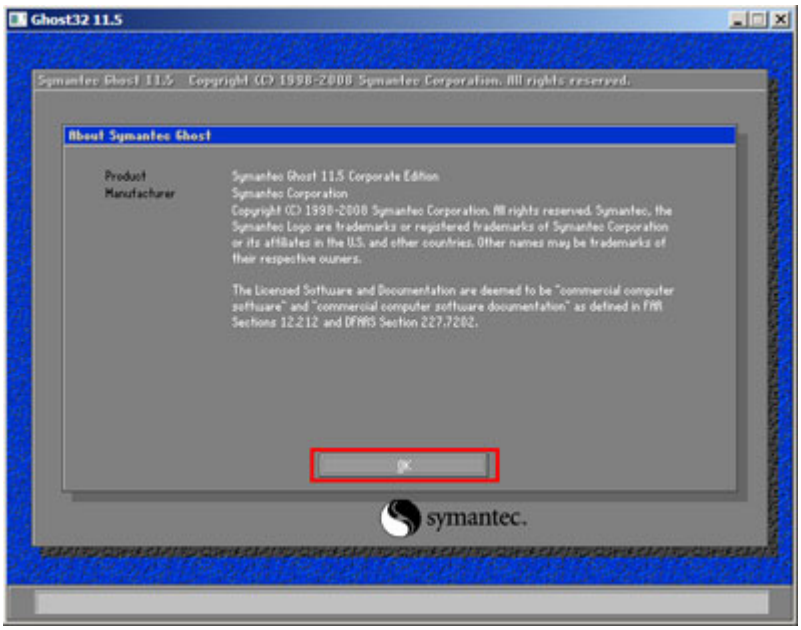


Figure C-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure C-13**).

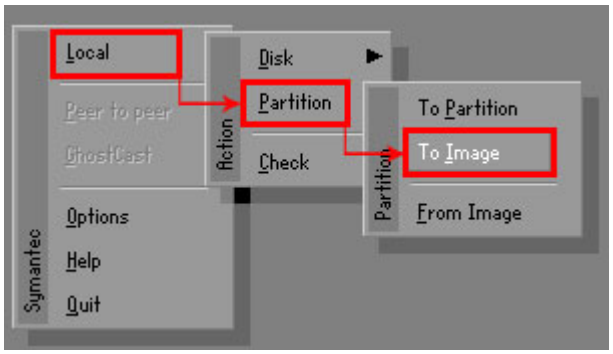


Figure C-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in **Figure C-14**. Then click OK.

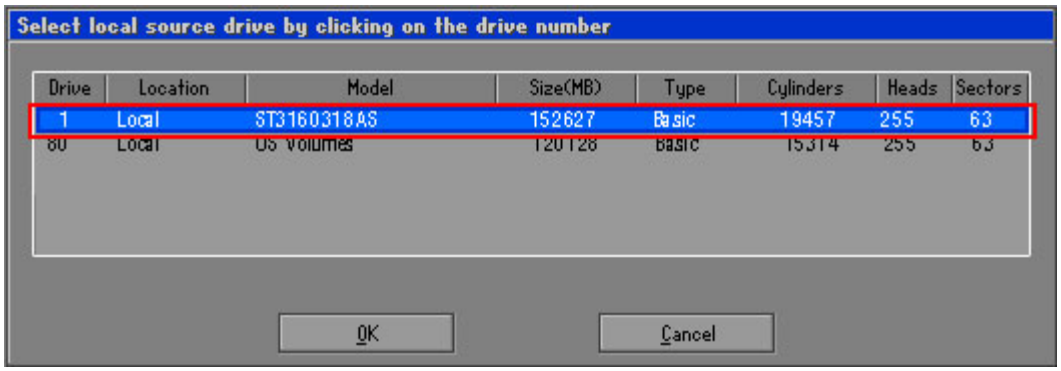


Figure C-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure C-15**. Then click OK.

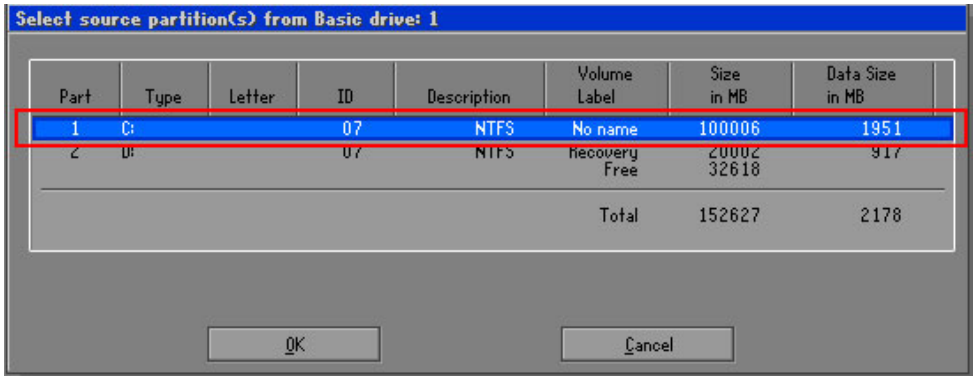


Figure C-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure C-16**). Click **Save**. The factory default image will then be saved in the selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.

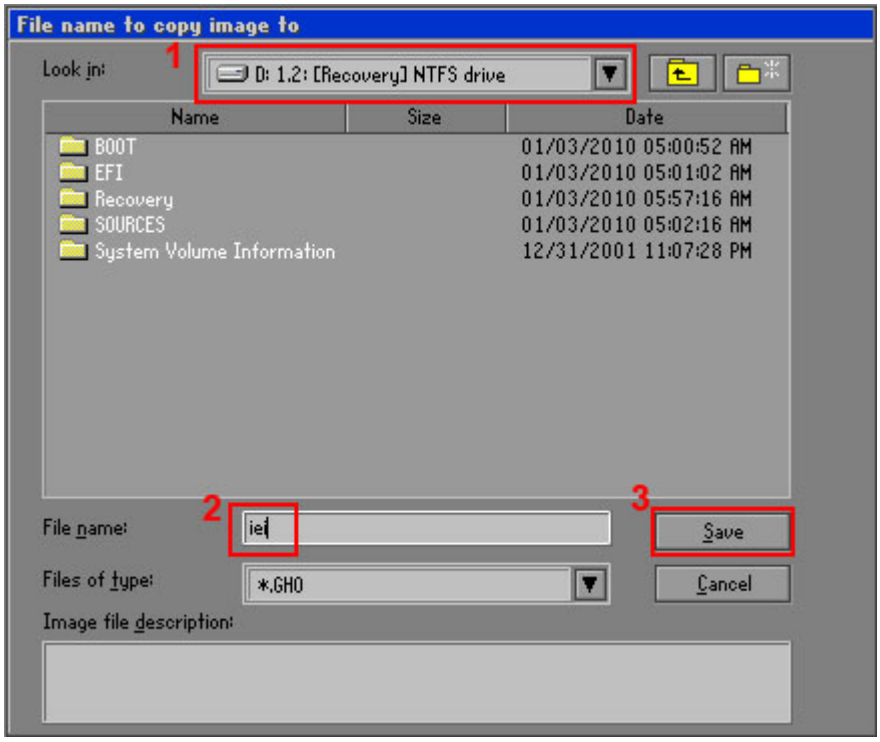


Figure C-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure C-17** prompts, click **High** to make the image file smaller.

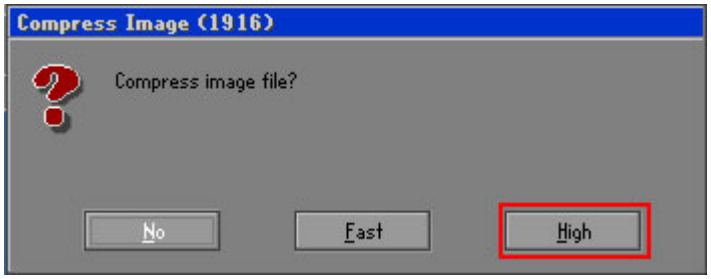


Figure C-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

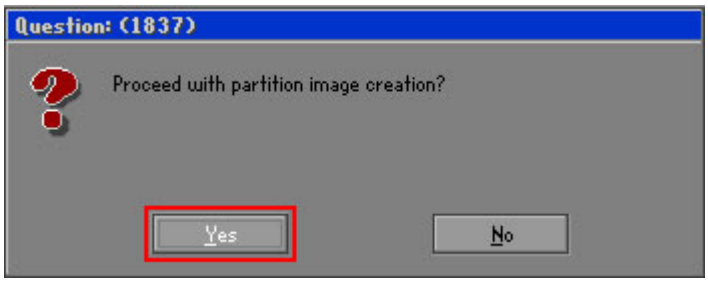


Figure C-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure C-19**).

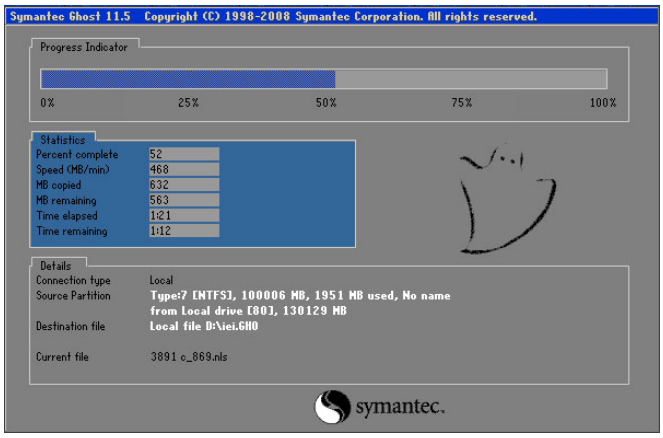


Figure C-19: Image Creation Process

Step 11: When the image creation completes, a screen prompts as shown in **Figure C-20**. Click **Continue** and close the Ghost window to exit the program.

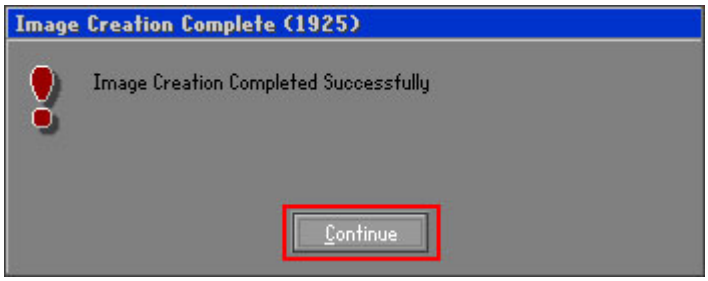


Figure C-20: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.

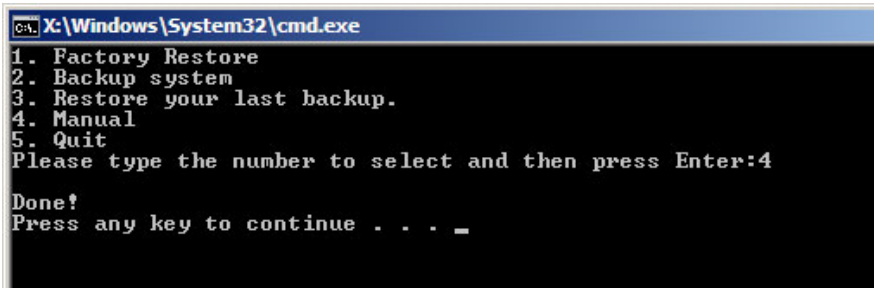


Figure C-21: Press Any Key to Continue

C.3 Setup Procedure for Linux

The initial setup procedures for a Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup the recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section C.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: ***/***
- Partition 2: **SWAP**

NOTE:

Please reserve enough space for partition 3 for saving recovery images.

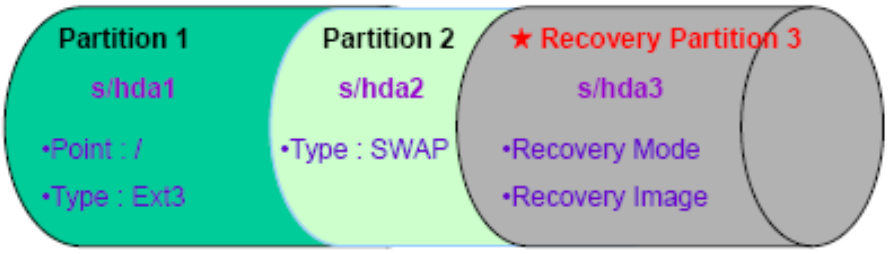


Figure C-22: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section C.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>exit

system32>format N: /fs:ntfs /q /v:Recovery /y

system32>exit

Step 4: **Build-up recovery partition**. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <**3**> and press <Enter> (**Figure C-23**). The Symantec Ghost window appears and starts configuring the system to build-up a

recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

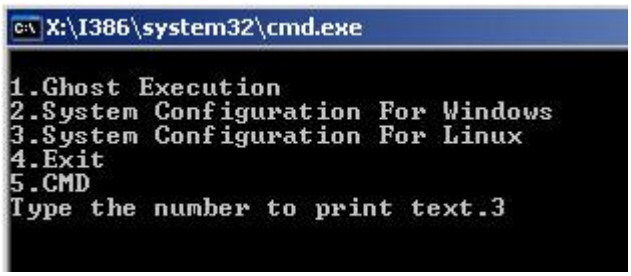


Figure C-23: System Configuration for Linux

Step 5: **Access the recovery tool main menu by modifying the "menu.lst"**. To first access the recovery tool main menu, the menu.lst must be modified. In Linux system, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst

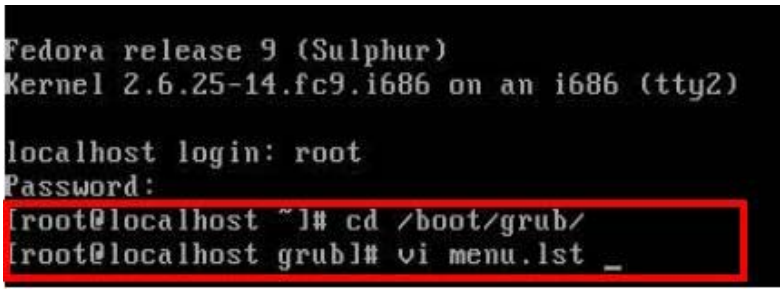
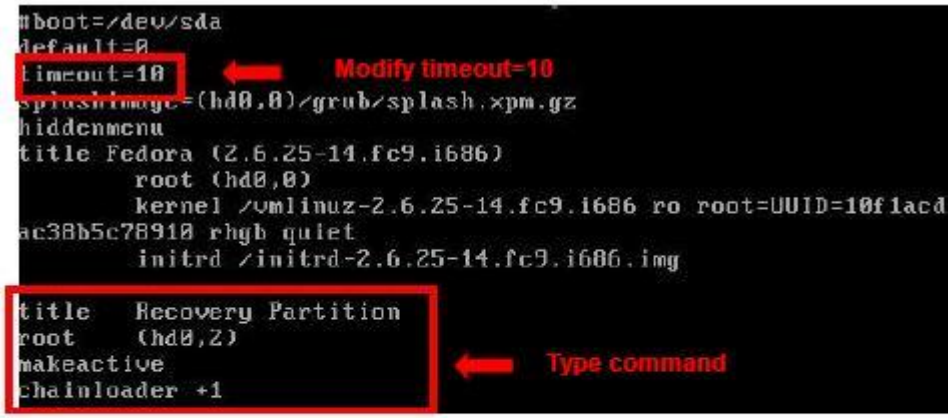


Figure C-24: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.



- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure C-25**)

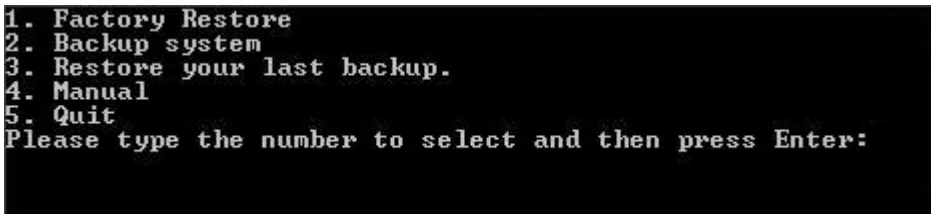

1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:

Figure C-25: Recovery Tool Menu

Step 8: **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section C.2.5** to create a factory default image.

C.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The main menu of the recovery tool is shown below.

Figure C-26: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore**: Restore the factory default image (iei.GHO) created in Section C.2.5.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

WARNING:

Please do not turn off the system power during the process of system recovery or backup.

WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

C.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <**1**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

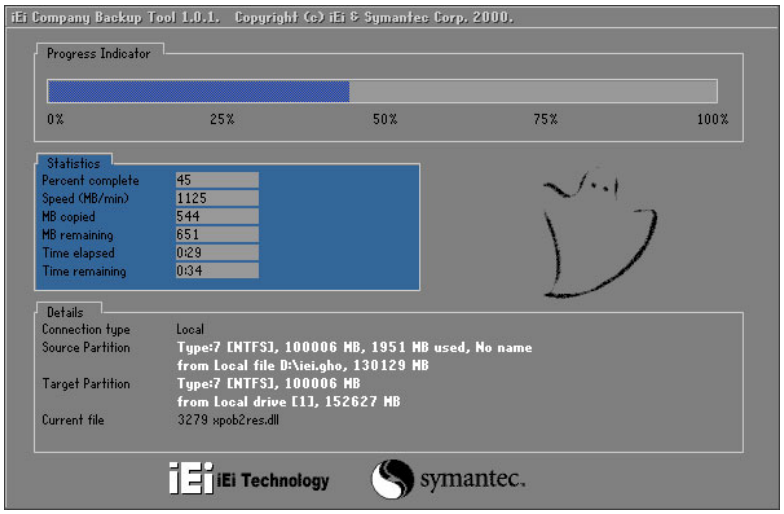


Figure C-27: Restore Factory Default

Step 3: The screen is shown as in **Figure C-28** when completed. Press any key to reboot the system.

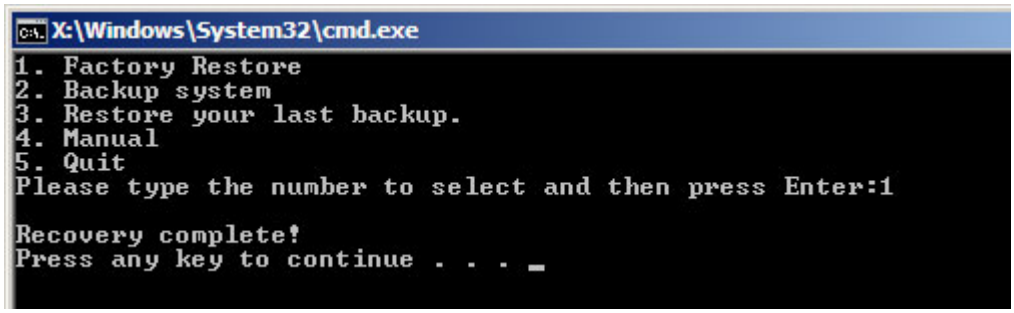

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:1
Recovery complete!
Press any key to continue . . .

Figure C-28: Recovery Complete Window

C.4.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <**2**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

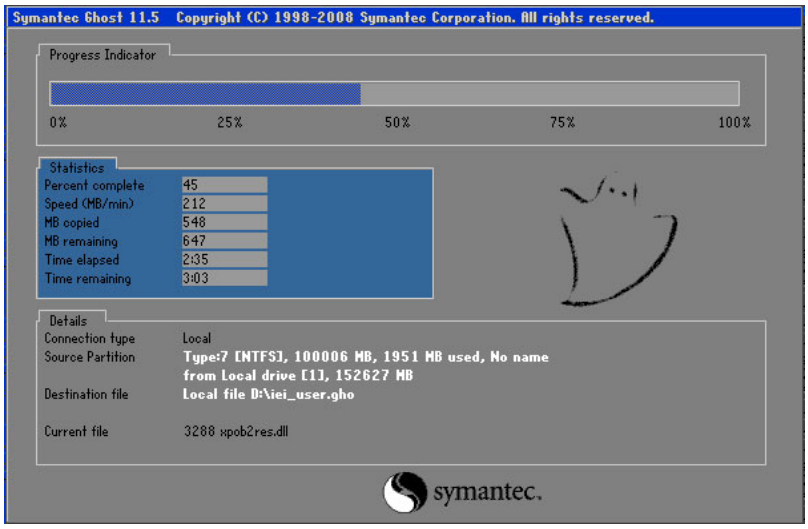


Figure C-29: Backup System

Step 3: The screen is shown as in **Figure C-30** when system backup is completed. Press any key to reboot the system.

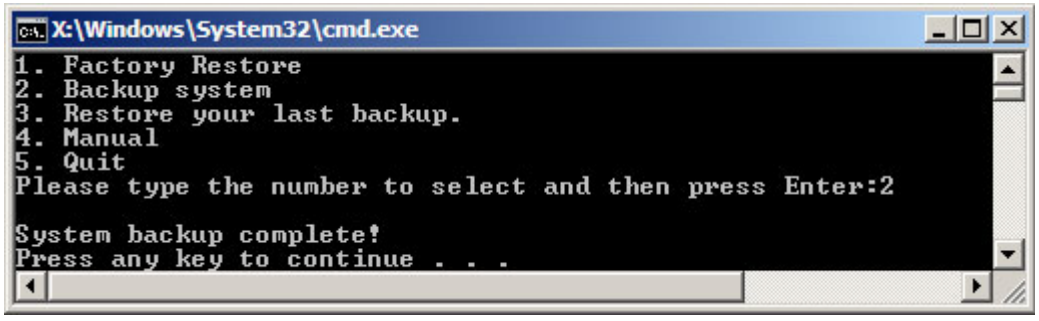

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:2
System backup complete!
Press any key to continue . . .

Figure C-30: System Backup Complete Window

C.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <**3**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

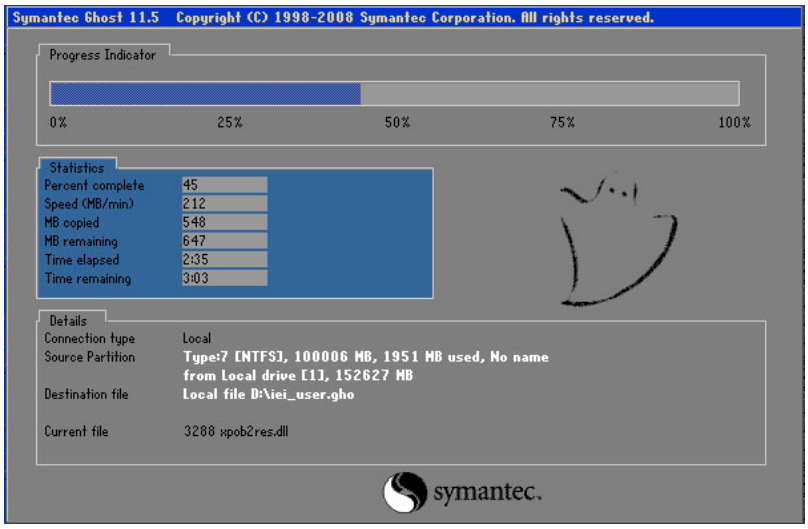


Figure C-31: Restore Backup

Step 3: The screen is shown as in **Figure C-32** when backup recovery is completed. Press any key to reboot the system.

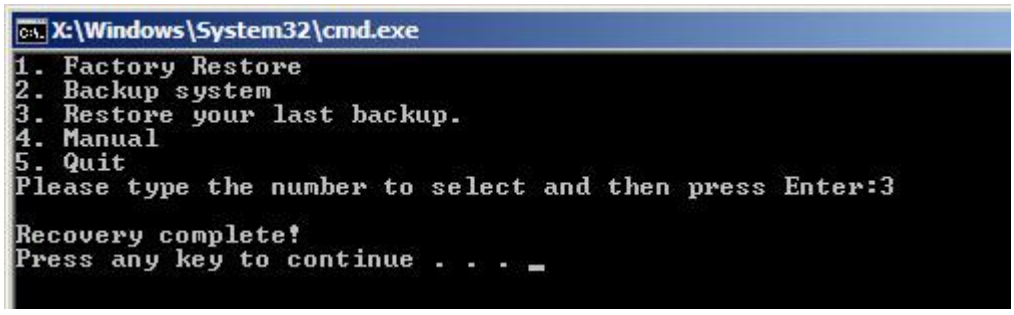

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:3
Recovery complete!
Press any key to continue . . .

Figure C-32: Restore System Backup Complete Window

C.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <**4**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

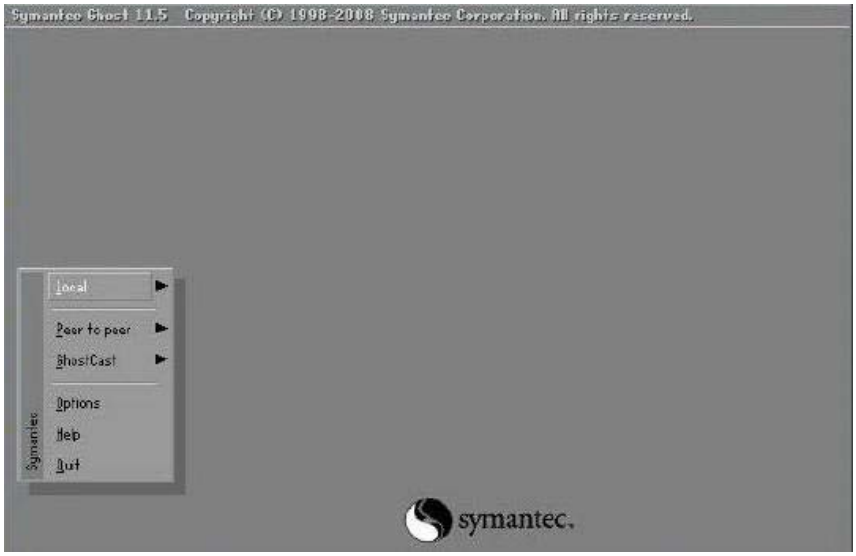


Figure C-33: Symantec Ghost Window

Step 3: When backup or recovery is completed, press any key to reboot the system.

C.5 Other Information

C.5.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

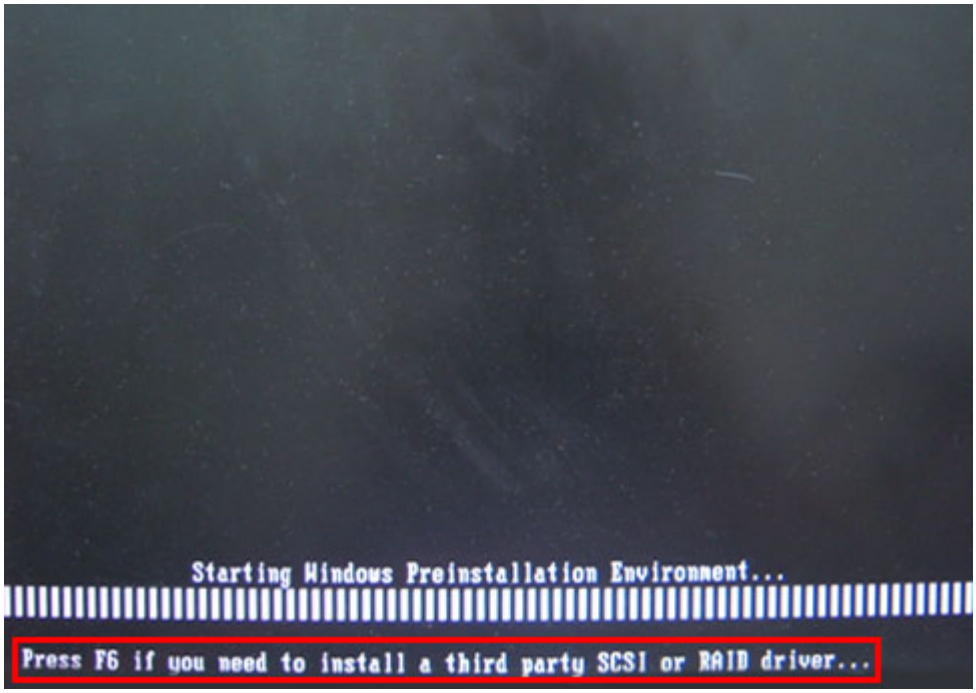
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

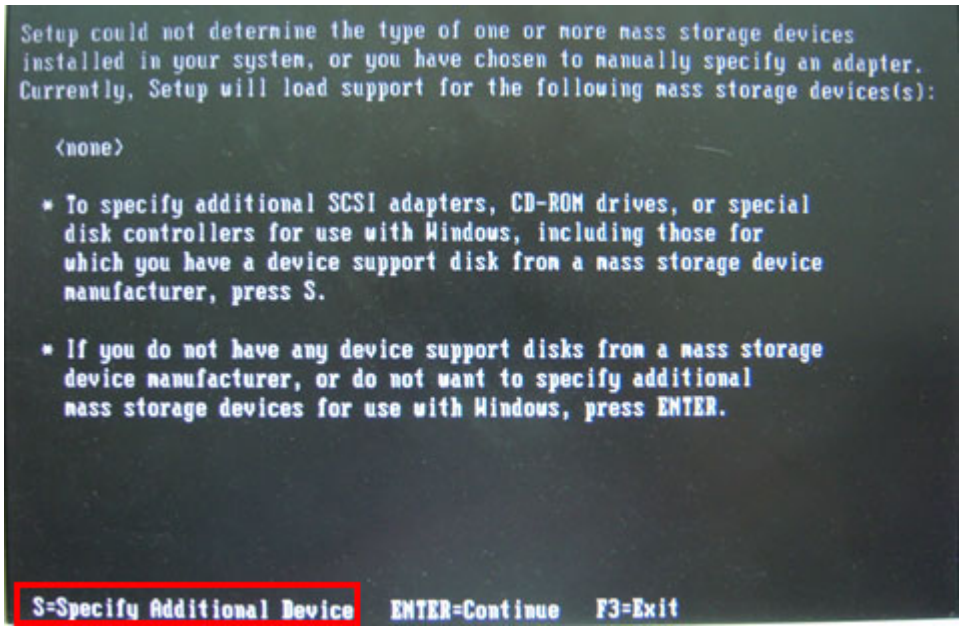
Step 2: Connect the USB floppy disk drive to the system.

Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

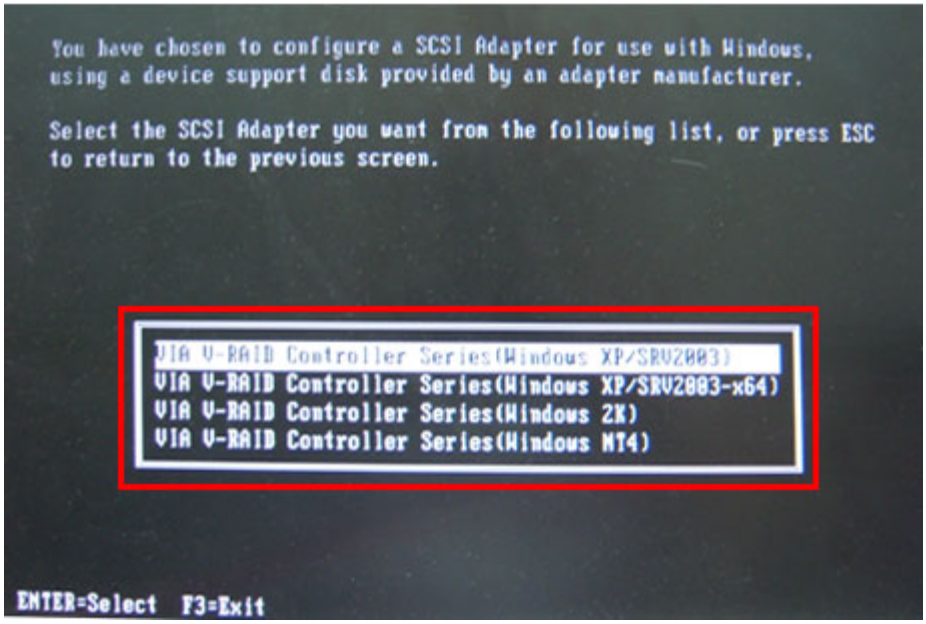
Step 4: When launching the recovery tool, press <**F6**>.



Step 5: When the following window appears, press <**S**> to select “Specify Additional Device”.


Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device
ENTER=Continue
F3=Exit

Step 6: In the following window, select a SATA controller mode used in the system. Then press <**Enter**>. The user can now start using the SATA HDD.


You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
VIA V-RAID Controller Series(Windows XP/SRV2003)
VIA V-RAID Controller Series(Windows XP/SRV2003-x64)
VIA V-RAID Controller Series(Windows 2K)
VIA V-RAID Controller Series(Windows NT4)
ENTER=Select
F3=Exit

Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section C.2.2 Create Partitions** to finish the whole setup process.

C.5.2 System Memory Requirement

To be able to access the recovery tool by pressing <**F3**> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS**: 128 MB system memory
- **Using AMI BIOS**: 512 MB system memory.

Appendix

D

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.

DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

E

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

EXAMPLE PROGRAM:

```
; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H

;
; ADD THE APPLICATION PROGRAM HERE
;

        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H

;
; EXIT ;
```

Appendix

F

Hazardous Materials Disclosure

F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						